

# Bulletin

Entomological Society of Canada  
Société d'entomologie du Canada

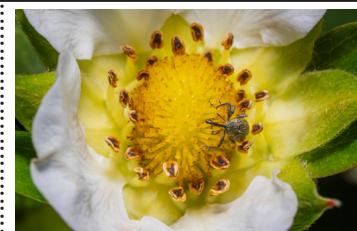
Volume 54  
Number / numéro 4



December / décembre 2022

Published quarterly by the  
Entomological Society of Canada

Publication trimestrielle par la  
Société d'entomologie du Canada



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Captions for cover photos can be found on the back cover.

La légende des photos de la couverture se situe sur la couverture arrière.

The face of a robber fly (Diptera: Asilidae) that was basking on a fence rail in August at Mission Creek Park in Kelowna, British Columbia.

Le visage d'une mouche Asilide (Diptera: Asilidae) qui se prélassait sur une clôture en août au parc Mission Creek à Kelowna.

[Photo: Bob Lalonde]

# Up front / Avant-propos

Chris MacQuarrie, President of ESC / Président de la SEC



Hello friends! Welcome to the final issue of the Bulletin for 2022 and my first as the author of Up Front!

I take the reins from Felix Sperling who stepped down as society President in November and now assumes the august title of ‘Past President of the Entomological Society of Canada’. Past Presidents serve an important role in the society, by providing the new President, Vice Presidents and society Directors with sage advice and the wisdom of their many years of service. They also get to watch, with some glee I think, as the new folks navigate the many challenges of managing the society.

We also bid bon voyage to Bill Riel as he rides off into the sunset (literally, as Bill is quite the cyclist). Bill departs his role as Past President and from his many years of committee service to the society, which is fitting as he has also recently retired from the Canadian Forest Service. Safe travels Bill, and we will miss you. But we are not without fresh blood! In November we welcomed a new crop of new directors and a new second Vice President in Christine Noronha who joins us from Agriculture and Agri-Food Canada in Prince Edward Island.

So who am I, Dear Reader? I should introduce myself by acknowledging that this is a return for me to these pages. Many years ago, I wrote a column under the pseudonym ‘Dear Buggy’ and perhaps some folks remember me from those days. Though it is nice that I have improved my location and am now up near the cover, I hope my old

Bonjour chers amis et chères amies!  
Bienvenue au dernier numéro du Bulletin de 2022 et à mon premier numéro en tant qu'auteur de l'avant-propos!

Je succède à Felix Sperling qui a quitté la présidence de la société en novembre et qui porte désormais le titre auguste de « président-sortant de la Société d'entomologie du Canada ». Les présidents sortants jouent un rôle important au sein de la société, en offrant au nouveau président, aux vice-présidents et aux administrateurs de la société des conseils avisés et la sagesse de leurs nombreuses années de service. Ils ont également l'occasion de regarder, avec une certaine jubilation je pense, les nouvelles personnes relever les nombreux défis de la gestion de la société.

Nous souhaitons également un bon voyage à Bill Riel qui s'en va vers le soleil couchant (littéralement, car Bill est un bon cycliste). Bill quitte son rôle de président-sortant et ses nombreuses années de service au sein des comités de la société, ce qui est approprié puisqu'il a aussi récemment pris sa retraite du Service canadien des forêts. Bon voyage Bill, et tu nous manqueras. Mais nous ne sommes pas sans sang neuf! En novembre, nous avons accueilli une nouvelle génération de nouveaux administrateurs et une nouvelle deuxième vice-présidente en la personne de Christine Noronha, qui nous vient d'Agriculture et Agroalimentaire Canada à l'Île-du-Prince-Édouard.

Qui suis-je donc, cher lecteur? Je dois me présenter en reconnaissant que c'est un retour pour moi dans ces pages. Il y a de nombreuses années, j'ai écrit une rubrique sous le pseudonyme « Cher Bibitte » et certains se souviennent peut-être de moi à cette époque. Bien que je sois heureux d'avoir amélioré mon emplacement dans le numéro et d'être maintenant près de la première page, j'espère que je ne manquerai pas à mes anciens voisins du Foisonnement de thèses.

neighbours in the Thesis Roundup don't miss me.

I write to you from Sault Ste. Marie, Ontario where I am a forest entomologist with the Canadian Forest Service. I arrived here via a circuitous route that began in Saskatoon with stops in Fredericton, Edmonton, and (on occasion) Anchorage, Alaska. Along the way, I've had the chance to meet many of you, and I hope that one thing I get to do this year is meet a whole lot more of our society's members. You can reach me at [ESCPresident@esc-sec.ca](mailto:ESCPresident@esc-sec.ca) anytime. I'll read everything you write and I'll do my best to respond.

The past year has been an exciting one for the Entomological Society of Canada, culminating with our Joint Annual Meeting with the Entomological Societies of America and British Columbia. I hope you were able to enjoy the meeting either in person or virtually and that you came away enthused and excited. Sincere thanks go to the volunteers from the three societies who took the time to organize this meeting and the staff of the Entomological Society of America and Strauss whose tireless work made the wishes of the organizing committee come true.

The past year has also been one wherein the society has taken a hard look at itself and how we operate. Behind the scenes, a committee has been examining the work the society does with the goal of identifying where we can work better and more efficiently to reduce the burden on our volunteers.

More visibly, there have been exciting developments with the governance of the society's scholarship fund that came about through the excellent hard work of that committee. The fund is now stronger than it has ever been and I encourage you to take the opportunity to donate if you can. This fund supports scholarships for students to support the next generation of entomologists. A few of those winners from this year you will find highlighted in the pages of this issue.

Your society's Equity, Diversity, and Inclusion Committee has been hard at work the past year to better understand the composition

Je vous écris de Sault Ste. Marie, en Ontario, où je suis entomologiste forestier au Service canadien des forêts. Je suis arrivé ici par une route détournée qui a commencé à Saskatoon avec des arrêts à Fredericton, Edmonton et (à l'occasion) Anchorage, en Alaska. En cours de route, j'ai eu la chance de rencontrer beaucoup d'entre vous, et j'espère que cette année, j'aurai l'occasion de rencontrer beaucoup plus de membres de notre société. Vous pouvez me joindre à [ESCPresident@esc-sec.ca](mailto:ESCPresident@esc-sec.ca) à tout moment. Je lirai tout ce que vous écrirez et je ferai de mon mieux pour y répondre.

La dernière année a été passionnante pour la Société d'entomologie du Canada, dont le point culminant a été notre réunion annuelle conjointe avec les Sociétés d'entomologie d'Amérique et de Colombie-Britannique. J'espère que vous avez pu profiter de cette réunion, en personne ou virtuellement, et que vous en êtes sortis enthousiastes et stimulés. Je remercie sincèrement les bénévoles des trois sociétés qui ont pris le temps d'organiser cette réunion et le personnel de la Société d'entomologie d'Amérique et de Strauss dont le travail inlassable a permis de réaliser les souhaits du comité organisateur.

Au cours de l'année écoulée, la société s'est également penchée sur elle-même et sur son mode de fonctionnement. Dans les coulisses, un comité a examiné le travail de la société dans le but d'identifier les domaines dans lesquels nous pouvons travailler mieux et plus efficacement afin de réduire la charge de travail de nos bénévoles.

De façon plus visible, la gouvernance du fonds de bourses de la société a connu des développements passionnants grâce à l'excellent travail de ce comité. Le fonds est maintenant plus fort qu'il ne l'a jamais été et je vous encourage à saisir l'occasion de faire un don si vous le pouvez. Ce fonds permet de financer des bourses d'études pour les étudiants et étudiantes afin de soutenir la prochaine génération d'entomologistes. Vous trouverez dans les pages de ce numéro quelques-uns des récipiendaires de cette année.

Le comité d'équité, de diversité et d'inclusion de votre société a travaillé d'arrache-pied l'année dernière pour mieux comprendre la composition de notre communauté entomologique

of our Canadian entomological community. In these pages you will find a summary of the results from the Society's first diversity survey that ran earlier this year. The diversity of focal insects and the diversity of career opportunities available to entomologists are two of the things that define this profession and our Society. One thing that should probably also define us as a community is being representative of the diversity of Canadians. It is my hope that a sincere engagement with the results of the diversity survey will help us understand what is necessary for us to build the diverse and welcoming society that we want to be.

I'll close by saying I'm very excited to be your ESC President for the next year. My very first experience with the society was as a volunteer working the registration table at the Joint Annual Meeting in Saskatoon in 1999. I wound up at that table mostly by accident when my boss asked if I'd like to volunteer for a few hours at the table in exchange for getting into the meeting for free. To a student with not much money that sounded like a pretty good exchange. I met a lot of folks at that meeting and it got me interested in this society; it made me think that maybe entomology could be a career. One thing led to another, and another, and, well, here I am 23 years later writing to you from these pages.

The point of that anecdote - if there is one - is that my participation with the society got started by that one small act of inviting me into this community. That act had a huge impact on my life and the life of my family. I'd like to think that actions such as those are something we all can do, to help grow our society and our community of entomologists. So if I could set a challenge for our membership for this year it would be to do just that. Find just one person you think belongs in our community and bring them to come along with you to the ESC. There are a lot of amazing folks out there and I'm very excited to meet them. I hope you are too.

canadienne. Dans ces pages, vous trouverez un résumé des résultats du premier sondage de la Société sur la diversité qui a été mené plus tôt cette année. La diversité des insectes focaux et la diversité des possibilités de carrière offertes aux entomologistes sont deux des éléments qui définissent cette profession et notre Société. Une chose qui devrait aussi nous définir en tant que communauté est d'être représentatif de la diversité des Canadiens et Canadiennes. J'espère qu'un engagement sincère envers les résultats du sondage sur la diversité nous aidera à comprendre ce qui est nécessaire pour construire la société diversifiée et accueillante que nous voulons être.

Je terminerai en disant que je suis très enthousiaste à l'idée d'être votre Président de la SEC pour la prochaine année. Ma toute première expérience avec la société a été de travailler bénévolement à la table d'inscription de la réunion annuelle conjointe à Saskatoon en 1999. Je me suis retrouvée à cette table presque par accident lorsque mon patron m'a demandé si j'aimerais faire quelques heures de bénévolat à la table en échange d'une entrée gratuite à la réunion. Pour un étudiant qui n'avait pas beaucoup d'argent, cela semblait être un échange plutôt intéressant. J'ai rencontré beaucoup de gens à cette réunion et j'ai commencé à m'intéresser à cette société; cela m'a fait penser que l'entomologie pourrait peut-être être une carrière. Une chose en entraînant une autre, et une autre encore, me voilà 23 ans plus tard en train de vous écrire dans ces pages.

Le but de cette anecdote - s'il y en a un - est que ma participation à la société a commencé par ce petit geste d'invitation dans cette communauté. Cet acte a eu un impact énorme sur ma vie et celle de ma famille. J'aime à penser que des actions comme celles-là sont quelque chose que nous pouvons tous faire, pour aider à développer notre société et notre communauté d'entomologistes. Donc, si je pouvais lancer un défi à nos membres pour cette année, ce serait de le faire. Trouvez une seule personne qui, selon vous, fait partie de notre communauté et invitez-la à vous accompagner à la SEC. Il y a beaucoup de gens extraordinaires et je suis très enthousiaste à l'idée de les rencontrer, j'espère que vous l'êtes aussi.

# Memories of JAM 2022 / Souvenirs de la RAC 2022

## Honours and Awards at JAM 2022



T. Wist



T. Wist

Past President Bill Riel (upper left) and (outgoing) President Felix Sperling introducing Awards Ceremonies



J. Sperling

From left: Chris MacQuarrie (incoming President), Gail Anderson (2021 Gold Medal), Donna Giberson (2022 Gold Medal) and Felix Sperling (outgoing President).



Gail Anderson  
2021 Gold Medal

Scott Brammer Photography / ESA



Donna Giberson  
2022 Gold Medal

Scott Brammer Photography / ESA



Maya Evenden, ESA Science  
Communication Award

Scott Brammer Photography / ESA

## Annual Meeting of Members



Keeping the meeting on track: ESC executive



The annual passing of the gavel: Felix Sperling (outgoing President) to Chris Macquarie (incoming President).

## Attendees at First Governing Board Meeting



From left: Chris MacQuarie, Jessica Gillung , Neil Holliday, Felix Sperling, Bill Riel, Colin Favret, Bernie Roitberg, Boyd Mori, Bryan Brunet, Erin Campbell, Dezene Huber, Suzanne Blatt, Matthew Muzzatti, Christine Noronha, Étienne Normandin, Sebastian Ibarra Jimenez, Morgan Jackson, Geoff Powell.



Clockwise from upper left: Jason Gibbs, View of room, Brian van Hezewijk, Rose Labbé, Jess Vickruck, Danielle Stephens

## Around and about at JAM 2022



Stanley Park Bioblitz, co-organized by the Stanley Park Ecology Society, the Entomological Society of BC, and the Biological Survey of Canada.



Curation Bioblitz at the Spencer Entomology Museum at UBC (organized by the Biological Survey of Canada).



Downtown Vancouver as the fog is lifting to show a beautiful sunny day.

Past President  
Bill Riel



Exploring Exhibition Hall.



T. Wist

Colin Favret examining some of the art displayed in the Insect Art exhibit.



Julien Saguez signs up new ESC members



Entomological Society of America



Relaxing before the morning plenary.  
From left: Dick Cannings, Syd Cannings, Rob Cannings, and Donna Giberson.

S. Gilmore

Closing Plenary Session: Three Brothers in Biology: Bugs, Birds, Books, Conservation, and Politics. From left: Syd Cannings, Rob Cannings, and Dick Cannings.

## Candid shots from mixers and meetings: JAM 2022



# STEP Corner / Le coin de la relève

## Rowan French and Matt Muzzatti



### Research Roundup

Are you an ESC student member looking to spread the word about your newly published paper? If so, we'd love to hear from you! We continue to publicize graduate student publications to the wider entomological community through our Research Roundup initiative. As part of this initiative, we invite students to submit (1) a brief (<240 character) summary of their paper, (2) one image related to the paper, (3) a one-sentence description of their thesis research, and (4) one sentence about (a) the aspect of their research they find most fascinating or (b) why they love insects. Check out the ESC blog, [Facebook](#), and [Twitter](#) pages for the most recent featured articles and student author biographies. If you would like your recently published paper to be featured, send us an email at [students@esc-sec.ca](mailto:students@esc-sec.ca). For regular updates about Canadian entomological research, join the [ESC Students Facebook page](#) or follow us on [Twitter](#) @esc\_students.

### Annual Meeting

The ESC, ESA, and ESBC co-hosted the Joint Annual Meeting in Vancouver this past November. ESC SEPAC helped to organize the silent auction and moderated the Joint ESA Rising Stars of Entomology and ESC Graduate Student Showcase (RSGSS) Symposium, a high-profile opportunity for graduate students near the completion of their degrees to present a more in-depth overview of their thesis research. Thank you to all that applied – congratulations to the 2022 RSGSS Awardees:

### Aperçu de la recherche

Vous êtes membre étudiant de la SEC et vous souhaitez faire connaître votre article récemment publié? Si oui, nous serions ravis de vous entendre! Nous continuons à faire connaître les publications en provenance de la communauté étudiante à l'ensemble de la communauté entomologique par le biais de notre initiative Aperçu de la recherche. Dans le cadre de cette initiative, nous invitons les étudiants à soumettre (1) un bref résumé (<240 caractères) de leur article, (2) une image liée à l'article, (3) une description en une phrase de leur recherche de thèse, et (4) une phrase sur (a) l'aspect de leur recherche qu'ils trouvent le plus fascinant ou (b) pourquoi ils aiment les insectes. Consultez le blogue et les pages [Facebook](#) et [Twitter](#) de la SEC pour obtenir les articles les plus récents et les biographies des étudiants auteurs. Si vous souhaitez que votre article récemment publié soit mis en vedette, envoyez-nous un courriel à [students@esc-sec.ca](mailto:students@esc-sec.ca). Pour obtenir des mises à jour régulières sur la recherche entomologique canadienne, rejoignez la page Facebook des [étudiants](#) de la SEC ou suivez-nous sur [Twitter](#) @esc\_students.

### Réunion annuelle

La SEC, la ESA et la ESBC ont organisé conjointement la réunion annuelle conjointe à Vancouver en novembre dernier. Le comité des affaires étudiantes et des jeunes professionnels de la SEC a participé à l'organisation de la vente aux enchères silencieuse et a modéré le symposium conjoint des étoiles montantes de l'entomologie de la ESA et de la vitrine des étudiants des cycles supérieurs de la SEC, une opportunité de haut niveau pour les étudiants et étudiantes des cycles supérieurs sur le point d'achever leur diplôme de présenter un aperçu plus approfondi de leur recherche de thèse. Merci à tous ceux qui ont postulé - félicitations aux récipiendaires 2022 :

**Jacob Basso** (University of Guelph) – The sterile insect technique as a novel management tool for control of pepper weevil (*Anthonomus eugenii* Cano) in greenhouse and field pepper crops. <https://www.youtube.com/watch?v=eHaC43oc8Z8>

**Anne-Sophie Caron** (Concordia University) – Top-down and bottom-up trophic interactions related to FTC outbreaks during low-density population density periods in temperate and boreal mixedwood forests in Quebec.

<https://www.youtube.com/watch?v=vpLEHZFgGMw&feature=youtu.be>

**Jessica Fraser** (University of Laval) – Compatibility of LED greenhouse lighting and parasitoid biocontrol for aphid management in pepper.

<https://www.youtube.com/watch?v=hLJLPITKA0I&feature=youtu.be>

**Mathilde Gaudreau** (Université de Montréal) – Investigating how UV radiation affects egg parasitoid fitness and behaviour.

<https://www.youtube.com/watch?v=r1hOW5Ip0vc&feature=youtu.be>

### Getting Involved with the ESC

SEPAC is always keen to take on new members! Volunteering for SEPAC is a great way to get involved with the Society and promote entomology across Canada. If you are interested in joining or just have suggestions for new initiatives in the coming year, email us at [students@esc-sec.ca](mailto:students@esc-sec.ca), or contact us personally at [rowan.french@mail.utoronto.ca](mailto:rowan.french@mail.utoronto.ca) and [mattmuzzatti@gmail.carleton.ca](mailto:mattmuzzatti@gmail.carleton.ca). We look forward to hearing from you!

### S'impliquer au sein de la SEC

Le comité des affaires étudiantes et des jeunes professionnels est toujours prêt à accueillir de nouveaux membres! Le bénévolat au sein du comité est une excellente façon de s'impliquer dans la Société et de promouvoir l'entomologie au Canada. Si vous êtes intéressé à vous joindre à nous ou si vous avez des suggestions de nouvelles initiatives pour l'année à venir, envoyez-nous un courriel à [students@esc-sec.ca](mailto:students@esc-sec.ca), ou contactez-nous personnellement à [rowan.french@mail.utoronto.ca](mailto:rowan.french@mail.utoronto.ca) ou [mattmuzzatti@gmail.carleton.ca](mailto:mattmuzzatti@gmail.carleton.ca). Nous avons hâte de vous lire!

## Thesis Roundup / Foisonnement de thèses

SEPAC wants to recognize and celebrate the accomplishments of newly minted entomology grads! If you or a student you know has recently defended an entomology-related thesis at a Canadian University, please send the following details to [students@esc-sec.ca](mailto:students@esc-sec.ca) student's name, date, degree, thesis title, supervisor(s), and university. This information will appear on the ESC website and in the next ESC Bulletin.

Le comité veut reconnaître et célébrer les réalisations des nouveaux diplômés en entomologie! Si vous, ou un étudiant que vous connaissez, a récemment soutenu sa thèse dans un domaine lié à l'entomologie dans une université canadienne, merci d'envoyer les informations suivantes à [students@esc-sec.ca](mailto:students@esc-sec.ca) nom de l'étudiant, date, diplôme, titre de la thèse, directeur(s) et université. Cette information apparaîtra sur le site web de la SEC et dans le prochain Bulletin de la SEC.

# ESC Student Awards / Bourses d'études de la SEC

## 2022 ESC Student Awards / Bourses d'études de la SEC 2022

Tyler Wist

ESC Student Awards Committee Chair

[Tyler.Wist@agr.gc.ca](mailto:Tyler.Wist@agr.gc.ca) (to volunteer to serve on this committee)

For the 2022 ESC student awards competition, we had 25 students apply for awards. The ESC Scholarship fund increased the disbursement of the awards from \$16,000 to \$18,000 in 2022 to better match charity requirements from the Canada Revenue Agency. The award increase was compensated for by awarding two extra \$1000 scholarships compared to last year (One **Dosdall Memorial Scholarship** and one **Borden Scholarship**). This increase and structure allowed for two more ESC students to receive awards.



The **ESC postgraduate scholarships** assist students in study and research leading to a postgraduate degree in entomology. Our two winners this year are, **Emma Rand** (Acadia University; left) (MSc level) and **Berenice Romero** (University of Saskatchewan; right) (PhD level).



The **Danks scholarship** support studies on the Canadian fauna in memory of David Danks (1974-2008), reflecting the interests of David and of his father Hugh in environmental science and entomology. Our two winners this year are **Jillian McGroarty** (Memorial University; left) and **Steven Srayco** (University of Saskatchewan; right).



The **Dr. Lloyd M. Dosdall Memorial Scholarship** was endowed by Teresa Height-Dosdall to honour the memory of Dr. Lloyd M. Dosdall and commemorate his many contributions to crop protection, insect ecology, and aquatic entomology in Canada. These awards are for students conducting research in the area of “arthropod community ecology” with a focus on aquatic or agro-ecosystems. Our three winners

this year are, **Irene Del Pilar Jimenez Roncancio** (left) and **Rachele Pizante** (upper right) (both from University of Alberta) and **Karolina Pusz-Bochenska** (University of Saskatchewan; lower right).





In recognition of the **Biological Survey of Canada**, the ESC offers one postgraduate award biennially to assist a student studying insect or terrestrial arthropod biodiversity in Canada on the basis of high scholastic achievement and excellence in insect faunistics in a Canadian habitat. Our winner is **Aaron Bell** (University of Saskatchewan).



### **Entomological Society of Canada Graduate Research Travel Scholarships**

To foster graduate education in entomology, the Entomological Society of Canada offers research-travel scholarships to help students increase the scope of the graduate training. These scholarships provide an opportunity for students to undertake research or course work pertinent to their thesis subject that



could not be carried out at their own institution. At least one scholarship will be given to a Ph.D. student and at least one to a M.Sc. student but this year we awarded two at the PhD level. Our winners are **Alice Assmar** (McGill University; left) and **Matthew Muzzatti** (Carleton University; right).



### **ESC John H. Borden Award**

In honour of Dr. John H. Borden, and his contributions in the field of forest pest ecology, this award assists students who are studying Integrated Pest Management (IPM) with an entomological emphasis. Our winners are **Jaime Challiserry** (Simon Fraser University) and **Jade Sherwood** (University of British Columbia).



I'd like to thank all of my committee members for their time, effort and excellent work on this committee and ask for any other interested volunteers to please contact the award chair at the email address above. Our society would not function without our volunteers. This committee must have the capacity to evaluate applications in both of Canada's official languages so if you are bilingual, please consider volunteering for this committee and giving back to your national entomological society.

In addition to the ESC student awards, this committee administers the newly renamed, **Ed Becker JAM Participation Award**, which had the same deadline for abstracts as this year's JAM (3 June 2022). We had 39 applicants. Thanks to a generous donation by the DuFault Foundation, we awarded 15 **Ed Becker JAM Participation Awards** of \$500 for students to travel to JAM 2022 in Vancouver, B.C. Our award winners were **Alice Assmar, Jacob Basso, Clarissa Capko, Jessica Fraser, Joel Goodwin, Jason LeMay, Grace McDougall-Vick, Matthew Muzzatti, Emma Rand, Samm Reynolds, Berenice Romero, Sabrina Rondeau, Farwa Sajadi, Taylor Swanburg, Luca Voscourt, Kanishka Senevirathna**.



T. Wist



T. Wist

Kanishka Senevirathna, Berenice Romero (left photo), Matt Muzzatti, and Alice Assmar (right photo) accept Becker travel awards.

## 2023 ESC Student Awards / Bourses d'études de la SEC 2023

Tyler Wist

Chair, ESC Student Awards Committee / Président, Comité des bourses d'études de la SEC

Hello ESC students! Please submit your applications for the ESC Student Awards by 1 March 2023 to be eligible for the awards. Please read the details on the webpage carefully (Student Awards – Entomological Society of Canada (<https://esc-sec.ca/student/student-awards/>)) and submit all applications by email to the ESC Association Coordinator at [info@esc-sec.ca](mailto:info@esc-sec.ca). Awards available this year are the Biological Survey of Canada Scholarship (\$2000), the John H. Borden Scholarship (\$1000), two Danks Scholarships (each at \$1500), two Dr Lloyd M. Dosdall Memorial Scholarships (\$1000 each), Postgraduate Scholarships (MSc and PhD, each at \$2000), and the Graduate Research Travel Scholarships. For all awards, two letters of reference are required (see website) as well as all of your official grades from undergraduate to your current level of education.

Bonjour aux étudiants de la SEC ! Veuillez soumettre vos candidatures pour les bourses d'études de la SEC avant le 1er mars 2023 afin d'être éligible. Veuillez lire attentivement les détails sur la page web (Bourses d'études -Société d'entomologie du Canada (<https://esc-sec.ca/fr/students/student-awards/>)) et soumettre toutes les demandes par courriel à la personne responsable de la coordination de l'association de la SEC à [info@esc-sec.ca](mailto:info@esc-sec.ca). Les bourses disponibles cette année sont la bourse de la Commission biologique du Canada (2000\$), la bourse John H. Borden (1000\$), deux bourses Danks (à 1500\$), deux bourses commémoratives Dr Lloyd M. Dosdall (à 1000\$), des bourses d'études supérieures (maîtrise et doctorat, chacune 2000\$) et des bourses de voyage pour la recherche. Pour toutes les bourses, deux lettres de recommandation sont requises (voir site web) ainsi que toutes vos notes officielles depuis le premier cycle jusqu'à votre niveau d'études actuel.

# News from the Regions / Nouvelles des régions



## Entomological Society of Alberta

The Entomological Society of Alberta annual general meeting and conference was held virtually on 21 October 2022. The keynote address was given by Dr. Doug Colwell from Agriculture and Agri-Food Canada. In total there were 18 oral presentations and 5 poster presentations. **Danielle Clarke** (University of Calgary) was awarded the **Dustin Hartley Memorial Award** for best student presentation for her talk entitled “Bumble bee speciation associated with a climatic cue: evidence and implications.” as voted on by all those in attendance. Hannah Kastelic (University of Alberta) received the **Undergraduate Award in Entomology**. Next year, the AGM will be held in the Edmonton region.



## Entomological Society of Manitoba

The 78<sup>th</sup> Annual Meeting of the Entomological Society of Manitoba was held on 28–29 October 2022. The scientific programme was held on the 28<sup>th</sup> and the morning of the 29<sup>th</sup>. Dr. Shelley Adamo, Dalhousie University, provided the keynote address. The Annual General Meeting was held in the afternoon of the 29<sup>th</sup>. At that time, **Drs. Terry Galloway and Bob Lamb** were presented their certificates as newly inducted **Fellows of the Entomological Society of Canada**. **Denice Geverink** won the **ESM Student Achievement Award**. **Madeleine Dupuis** and **Mireille Krul** were jointly awarded the 2022 **Orkin Award**. **Megan Colwell** was awarded the **ESM Student Leadership and Service Award** and **Daniel Heschuk** and **Michael Killewald** were each awarded the **ESM Graduate Scholarship**. It was announced at the AGM that ESM has formally invited the ESC to a joint annual meeting in 2026. The ESM remains committed to equity, diversity, and inclusion and has provided additional support the Ento-POC to encourage diversity in entomological societies. The youth encouragement and outreach committee of the ESM has renewed engagement as pandemic restrictions have eased, presenting to over 900 people in 2022.

Due to a change in voting system, newly elected members of the ESM, normally announced at the AGM, have not yet been decided. Elections are expected to be held soon. The current executive committee of the ESM is listed on p. 209.



Neil Holliday and Jason Gibbs presenting certificates as newly inducted Fellows of the Entomological Society of Canada to Terry Galloway (left) and Bob Lamb (right).



## Entomological Society of Ontario

**ESO AGM 2022:** On 23-24 September, The Entomological Society of Ontario hosted its 159th Annual General Meeting. The virtual meeting was a huge success this year with over 60 registrants including 37 presenters! We want to extend a big thank you to our plenary speaker Dr. Jessica Gillung for a captivating talk on specimen-based research in genomics and the importance of revisiting and curating our expansive insect collections. Congratulations also go out to our six student award winners for their impressive presentations. Congrats to **Thomas Hall** (1st place) and **Jacob Basso** (2nd place) for their **Lightening Talks**, to **Hadil Elsayed** (1st place) and **Sherry Du** (2nd place) for their **Poster Presentations** and to **Sabrina Rondeau** (1st place) and **Lillian Corbin** (2nd place) for their **Oral Presentations!**



## Société d'entomologie du Québec

During the meeting of the Société d'entomologie du Québec held in Granby , QC, on 27 October 2022, Charles Vincent was presented the title of « Membre Émérite ».



Joseph Moisan-de Serres

From left to right : Jean-Philippe Parent (President, SEQ); Charles Vincent; Julien Saguez (Nominator).

## Summary of the First ESC EDI Survey: I Résumé du premier sondage de la SEC sur l'ÉDI : I

Boyd Mori, Catherine Scott, Diana Wilches-Correal, Jess Vickruck, Morgan Jackson, and Sebastian Ibarra Jimenez

(Authors are listed in first name alphabetical order) / (par ordre alphabétique de prénom)

### Introduction

In the spring of 2022, the Equity, Diversity, and Inclusion (EDI) committee of the ESC put together a survey aimed at a detailed understanding of the demographics of the society. The survey also aimed to assess respondents' views on important topics relating to representation, the role of the society, and whether members or recently lapsed members felt the society was doing a good job at representing them. The overall goal was to use the survey results as a starting point to identify current needs in EDI and shape future initiatives of the ESC. The survey questions were assembled by the committee, while working with Center for Race and Culture (CFRAC) in Edmonton, Alberta, to ensure the wording and composition of the questions were appropriate. Translation into French was done by the ESC's Bilingualism Committee, coordinated by Véronique Martel. The survey was implemented in coordination with Strauss, ESC's events and association management services provider. Links were sent via email to members and recent members of the ESC on 9 May 2022 asking them to complete the survey. A subsequent reminder email was sent out 24 May 2022. Link to the survey sent to individuals: <https://docs.google.com/document/d/e/2PACX-1vQzfPPQn6O35sa49qxbBhN-JZsva7cVmmqWc3nugDr4Q1VLeR7KPguJ3gofqtW08LWIqpa3uwY8vRON/pub>

The results are extensive; to avoid overwhelming *Bulletin* readers, we plan to present the survey results in the EDI section of the *Bulletin* across three issues. This first contribution presents the results from the member demographic data, the second will discuss responses from questions relating to attitudes and beliefs

### Introduction

Au printemps 2022, le comité sur l'équité, la diversité et l'inclusion (ÉDI) de la SEC a mis sur pied un sondage visant à comprendre en détail les données démographiques de la société. Le sondage visait également à évaluer les points de vue des personnes ayant répondu sur des sujets importants liés à la représentation, au rôle de la société, et à déterminer si les membres ou les membres ayant récemment quitté la SEC estimaient que la société faisait un bon travail pour les représenter. L'objectif global était d'utiliser les résultats du sondage comme point de départ pour identifier les besoins actuels en matière d'ÉDI et façonner les initiatives futures de la SEC. Les questions du sondage ont été assemblées par le comité, tout en travaillant avec le Center for Race and Culture (CFRAC) d'Edmonton, en Alberta, pour s'assurer que la formulation et la composition des questions étaient appropriées. La traduction en français a été effectuée par le comité du bilinguisme de la SEC, coordonné par Véronique Martel. Le sondage a été mis en œuvre en coordination avec Strauss, le fournisseur de services de gestion des événements et des associations de la SEC. Des liens ont été envoyés par courriel aux membres et aux nouveaux membres de la SEC le 9 mai 2022 pour leur demander de répondre au sondage. Un courriel de rappel a ensuite été envoyé le 24 mai 2022. Lien vers le sondage envoyé aux individus : <https://docs.google.com/document/d/e/2PACX-1vQzfPPQn6O35sa49qxbBhN-JZsva7cVmmqWc3nugDr4Q1VLeR7KPguJ3gofqtW08LWIqpa3uwY8vRON/pub>

Les résultats sont considérables; pour éviter de submerger le lecteurat du *Bulletin*, nous prévoyons de présenter les résultats du sondage dans la section ÉDI du *Bulletin* en trois numéros. La première contribution présente les résultats des données démographiques des membres, la seconde discutera des réponses aux questions relatives aux attitudes et aux croyances envers l'ÉDI, et la dernière proposera des actions que la société

towards EDI, and the last will offer action items that the society might implement based upon the survey responses.

## **Survey Results: Demographics**

### **Response rate and membership**

One hundred and eleven people completed the survey, and 107 of these respondents reported that they were current ESC members. The survey was sent to 571 individuals, representing a response rate of approximately 20%. The ESC had 454 active members at the time of the survey.

The most common reason given for not being a current member was “I only pay dues in years that I attend the JAM”. Other stated reasons for non-membership included “lack of clear benefits of membership” and “cost of membership”. The survey targeted current and recently lapsed members of the ESC, thus responses to this question do not provide a representative summary of all the reasons people choose *not* to be members of our society. However, they do provide some insight into reasons some members of our community do not always renew their membership from year to year.

### **Age and Career Stage**

Respondents’ ages ranged from younger than 21 to over 90, with a median age range of 41-50. The gender ratio of respondents shifted from more women and non-binary people aged 21-40 to more even in those aged 41-50, than to older cohorts increasingly dominated by men (Fig. 1a).

Research into historical demographics of STEM fields has demonstrated significant bias toward men and a lack of retention of women and non-binary people who pursue entomology in graduate school, and data from this survey appear to support these broader trends. Increased women’s representation, especially as individuals advance through their career, is unlikely without addressing retention and attrition issues (Walker 2018; Wapman et al. 2022). The considerable proportion of younger respondents who identify as women and/or non-binary may reflect a real gender bias

pourrait mettre en œuvre sur la base des réponses au sondage.

## **Résultats du sondage : Démographie**

### **Taux de réponse et membres**

Cent onze personnes ont rempli le sondage, et 107 d’entre elles ont déclaré être actuellement membres de la SEC. Le sondage a été envoyé à 571 personnes, soit un taux de réponse d’environ 20%. La SEC comptait 454 membres actifs au moment du sondage.

La raison la plus fréquemment invoquée pour ne pas être membre est la suivante : « Je ne paie des cotisations que les années où je participe à la réunion annuelle conjointe ». Parmi les autres raisons invoquées pour ne pas être membre, citons « le manque d'avantages clairs de l'adhésion » et « le coût de l'adhésion ». Le sondage visait les membres actuels de la SEC et ceux qui ont récemment cessé d'y adhérer. Les réponses à cette question ne constituent donc pas un résumé représentatif de toutes les raisons pour lesquelles les gens choisissent de ne pas être membres de notre société. Cependant, elles donnent un aperçu des raisons pour lesquelles certains membres de notre communauté ne renouvellent pas toujours leur adhésion d'une année à l'autre.

### **Âge et stade de la carrière**

L'âge des personnes ayant répondu allait de moins de 21 ans à plus de 90 ans, avec une répartition médiane de 41 à 50 ans. Le rapport de genre des personnes ayant répondu est passé d'un nombre plus élevé de femmes et de personnes non binaires chez les 21 à 40 ans à un nombre plus égal chez les personnes âgées de 41 à 50 ans, puis à des cohortes plus âgées de plus en plus dominées par les hommes (Fig. 1a).

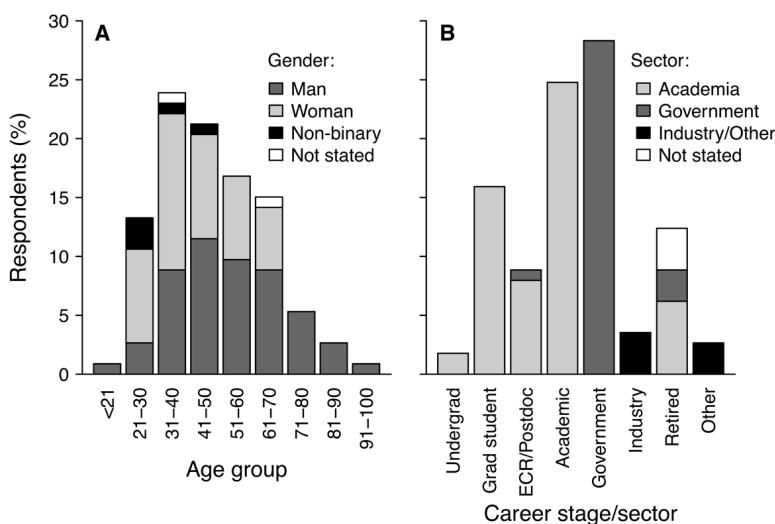
La recherche sur les données démographiques historiques des domaines STIM a démontré un biais important en faveur des hommes et un manque de rétention des femmes et des personnes non binaires qui poursuivent des études supérieures en entomologie, et les données de ce sondage semblent confirmer ces tendances plus larges. Il est peu probable que la représentation des femmes augmente, en particulier à mesure que les individus avancent dans leur carrière, si l'on ne s'attaque pas aux problèmes de rétention et d'attrition (Wapman et al. 2022; Walker 2018). La proportion

in early career stage members, or a greater tendency for those of minoritized genders to complete surveys related to EDI. In either case, efforts to not just attract but to support and *retain* women, non-binary, and transgender people in Canadian entomology (and STEM fields more broadly) are warranted.

Respondents represented the entire range of career stages from undergraduate students to retired entomologists (Fig. 1b). Twenty-seven percent of respondents were students or early-career researchers (ECRs). In total, 53% of respondents were established researchers in academia, government, or industry, with government scientists most common (28%), followed by professors and lecturers (25%), and those working in industry in the minority (4%). The remainder of respondents were retired (12%) or in other categories (3%), which included enthusiasts, educators outside of academia, and science communicators. The proportions of respondents representing each career

considérable de jeunes personnes ayant répondu qui s'identifient comme des femmes et/ou des non-binaires peut refléter un réel préjugé de genre chez les membres en début de carrière, ou une plus grande tendance des personnes de genre minoritaire à répondre aux sondages liés à l'ÉDI. Dans un cas comme dans l'autre, il est justifié de déployer des efforts non seulement pour attirer, mais aussi pour soutenir et retenir les femmes, les personnes non binaires et les transgenres dans le domaine de l'entomologie au Canada (et plus largement dans les domaines des STIM).

Les personnes ayant répondu représentaient toute la gamme des étapes de la carrière, des personnes aux études de premier cycle aux entomologistes à la retraite (Fig. 1b). Vingt-sept pour cent des personnes ayant répondu étaient aux études ou en début de carrière. Au total, 53% des personnes ayant répondu étaient des scientifiques établis dans le milieu universitaire, le gouvernement ou l'industrie, les scientifiques du gouvernement étant les plus nombreux (28%), suivis du corps professoral et des chargés et chargées de cours (25%), et ceux travaillant dans l'industrie étant minoritaires (4%). Les autres



**Figure 1.** Age, gender, and current occupation of respondents to the ESC EDI survey / Âge, genre et profession actuelle des personnes ayant répondu au sondage de la SEC sur l'ÉDI.

(A) Age of respondents by gender / Âge des personnes ayant répondu par genre. (B) Career stage/employment sector of respondents / Stade de carrière/secteur d'emploi des personnes ayant répondu.

stage are similar to the proportions of ESC members in each membership category as of June 2022 (30% Student and Early professional; 46% Regular; 16% Emeritus; 8% Entomology Enthusiast).

### **Gender and Sexual orientation**

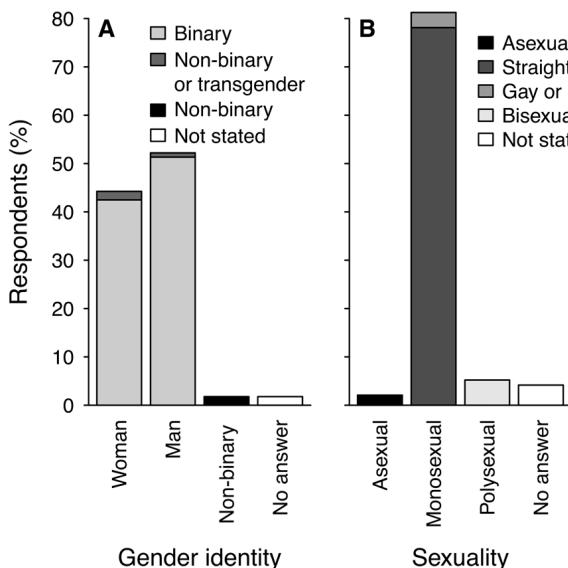
Fifty-one percent of respondents identified as men, including people also identifying as non-binary and/or transgender (Fig. 2a). Forty-two percent of respondents identified as women, including those who also identified as non-binary and/or transgender. Four percent identified as strictly non-binary while 2% chose not to provide their gender information. According to the 2021 Canadian Census, “women+” (i.e., women, girls, and some non-binary people) make up 51% of the population in Canada, and “men+” make up the remaining 49%.

The vast majority of respondents who answered this question ( $n = 85$ ) identified as monosexual/straight (78%), with 5% identifying as bisexual, 3% as gay or lesbian and 2% as asexual (Fig. 2b). In comparison, 4% of the population of Canada over age 15 identify as members of the LGBTQ2+ community (Statistics Canada 2021).

personnes ayant répondu étaient à la retraite (12%) ou appartenaient à d'autres catégories (3%), dont les enthousiastes, les gens en éducation hors du milieu universitaire et les gens en communication scientifique. Les proportions de personnes ayant répondu représentant chaque étape de la carrière sont similaires aux proportions de membres de la SEC dans chaque catégorie de membres en juin 2022 (30% aux études et en début de carrière; 46% de membres réguliers; 16% de membres émérites; 8% d'enthousiastes de l'entomologie).

### **Genre et orientation sexuelle**

Cinquante et un pour cent des personnes ayant répondu se sont identifiées comme des hommes, y compris les personnes s'identifiant également comme non-binaires et/ou transgenres (Fig. 2a). Quarante-deux pour cent des personnes ayant répondu se sont identifiées comme des femmes, y compris les personnes s'identifiant également comme non-binaires et/ou transgenres. Quatre pour cent se sont identifiées comme strictement non-binaires tandis que 2% ont choisi de ne pas fournir d'information sur leur genre. Selon le recensement canadien de 2021, les « femmes+ » (c.-à-d. les femmes, les filles et certaines personnes non-binaires) représentent 51% de la population au Canada, et les « hommes+ » représentent les 49% restants.



**Figure 2.** (A) Gender identity and (B) sexual orientation of respondents to the ESC EDI survey / (A) Identité de genre et B) orientation sexuelle des personnes ayant répondu au sondage de la SEC sur l'ÉDI.

## **Ethnic origin, visible minorities, and racialization -**

The 2022 EDI survey asked respondents if they identified as racialized individuals, as well as their ethnic origin(s) or the visible minority group(s) that they identified with the most. The question did not differentiate between “visible minority” and “ethnic origin”. Visible minority is a term used by individuals who identify as non-white, other than Indigenous peoples, while ethnic origin refers to a person’s roots and reflects each respondent’s perception of their ancestry and should not be confused with citizenship, nationality, language, or place of birth (Statistics Canada 2022). The process of social construction of race is called racialization: the process by which societies construct races as real, different and unequal in ways that matter to economic, political and social life (Ontario Human Rights Commission 2005).

Seventy-eight percent of respondents identified as non-racialized and 21% identified as racialized. In contrast, 26.5% percent of the greater Canadian population identified as members of a “visible minority” group or “racialized” (Statistics Canada, 2022).

Compared to the greater Canadian population, the ESC appears to have a higher proportion of individuals who identify as white, Latin American, or Japanese (Table 1). The ESC appears to have a smaller proportion of individuals who identify as Black or Chinese, while proportions of individuals who identify as Korean, South Asian, or Indigenous (First Nation, Metis, or Inuit) are within one percentage point of the overall Canadian population. However, estimates for Indigenous or Aboriginal populations in Canada are affected more than most variables by the incomplete enumeration of certain reserves and settlements in the 2021 Census of Population. Some individuals also self-described their visible minority, ethnic origin, or racialized identity as Afro-Caribbean, mixed Caribbean, India, Jewish, and/or Nahua. These are included

La grande majorité des personnes ayant répondu à cette question ( $n = 85$ ) se sont identifiées comme monosexuelles/hétérosexuelles (78%), 5% comme bisexuelles, 3% comme gaies ou lesbiennes et 2% comme asexuelles (Fig. 2b). En comparaison, 4% de la population canadienne de plus de 15 ans s’identifie comme membre de la communauté LGBTQ2+ (Statistics Canada 2021).

## **Origine ethnique, minorités visibles et racialisation**

Le sondage ÉDI 2022 demandait aux personnes ayant répondu si elles s’identifiaient comme des personnes racialisées, ainsi que leur(s) origine(s) ethnique(s) ou le(s) groupe(s) de minorités visibles auxquels elles s’identifiaient le plus. La question ne faisait pas de différence entre « minorité visible » et « origine ethnique. » Le terme « minorité visible » est utilisé par les personnes qui s’identifient comme n’étant pas de race blanche, à l’exception des peuples autochtones, tandis que l’origine ethnique fait référence aux racines d’une personne et reflète la perception qu’a chaque personne de son ascendance et ne doit pas être confondue avec la citoyenneté, la nationalité, la langue ou le lieu de naissance (Statistics Canada, 2022). Le processus de construction sociale de la race s’appelle la racialisation : le processus par lequel les sociétés construisent les races comme étant réelles, différentes et inégales dans des domaines importants pour la vie économique, politique et sociale (Commission ontarienne des droits de la personne, 2005).

Soixante-dix-huit pour cent des personnes ayant répondu se sont identifiées comme non racialisées et 21% comme racialisées. En revanche, 26,5% de la population canadienne en général s’est identifiée comme membre d’une « minorité visible » ou « racialisée » (Statistics Canada, 2022).

Comparativement à l’ensemble de la population canadienne, la SEC semble avoir une plus grande proportion de personnes qui s’identifient comme étant Blanches, Latino-américaines ou Japonaises (tableau 1). La SEC semble avoir une plus petite proportion de personnes qui s’identifient comme Noires ou Chinoises, tandis que les proportions de personnes qui s’identifient comme Coréennes, Asiatiques du Sud ou Autochtones (Premières nations, Métis ou Inuits) se situent à un point de pourcentage près de l’ensemble de la population

**Table 1.** Self identified ethnic origin and visible minority groups within the ESC compared to those of the greater Canadian population (2021 Canada Census data) / Groupes d'origine ethnique et de minorités visibles auto-identifiés au sein de la SEC, comparés à ceux de la population canadienne dans son ensemble (données du recensement du Canada de 2021).

ESC survey / Sondage SEC	Proportion of survey respondents / Proportion des personnes ayant répondu*	2021 Census (Indicated if term used differ) / Recensement 2021 (Indiqué si le terme utilisé diffère) <sup>1</sup>	Proportion of total population / Proportion de la population totale*
White (European descent) / Blanc/Blanche (d'origine européenne)	77%	<i>Non-visible minority / Minorité non-visible</i>	73%
White (non-European descent) / Minorité non-visible	8%	<i>NA</i>	
Latin American / D'origine latino-américaine	6%		1.6%
South Asian / Asie du Sud-Est	6%		7.1%
Indigenous [First Nation, Metis, or Inuk (Inuit)] / Autochtone [Première Nation, Métis ou Inuk (Inuit)]	4%	<i>Aboriginal Identity [First Nation, Metis, or Inuk (Inuit)] / Identité Autochtone [Première Nation, Métis ou Inuk (Inuit)]**</i>	5%
Indigenous (other country) / Autochtone (autre pays)	2%	<i>NA</i>	
Black / Noir/Noire	2%		4.2%
Chinese / D'origine chinoise	2%		4.7%
Japanese / D'origine japonaise	1%		0.27%
Korean / D'origine japonaise	1%		0.6%
Other / Autre	5%		3.53%

\*The sum and percentage of the groups in this table is greater than the total respondents because a person may report more than one group in the survey / La somme et le pourcentage des groupes dans ce tableau sont supérieurs au total des personnes ayant répondu car une personne peut déclarer plus d'un groupe dans le sondage.

\*\*Aboriginal identity for the population in private households -25% sample data. This estimate is more affected that most by the incomplete enumeration of certain Indian reserves and Indian settlements in the 2021 Census of Population (Statistics Canada 2022) / Identité Autochtone pour la population dans les ménages privés -25% de données d'échantillon. Cette estimation est plus affectée que la plupart par le dénombrement incomplet de certaines réserves et communautés autochtones dans le recensement de la population de 2021 (Statistics Canada 2022).

<sup>1</sup>Cette comparaison a été faite pour les réponses en anglais seulement

in the to “other” category to potentially avoid identifying respondents, due to low response rates in some of the identities (Table 1).

Some of the wording and concepts used in the EDI survey are different from those used in the 2021 Canadian census; however, contrasting these results provides valuable insights into the ESC community compared to the greater Canadian population, although inferences should be made with caution.

### **Disabilities**

Thirteen percent of respondents reported living with one or more disabilities. The 2017 Canadian Survey on Disability identified that one in five (22%) of the Canadian population aged 15 years and over had one or more disabilities, with disabilities related to pain, flexibility, mobility, and mental health as the most common disability types (Morris et al. 2018). The low level of disabilities reported by survey respondents compared to the Canadian population could result from disabled people facing barriers to access and full participation in our Society, entomology, and/or higher education (Friedensen et al. 2021). It may also indicate that the ESC is not doing a good job at supporting and retaining members with disabilities. Stigma may also influence the likelihood of individuals identifying as disabled, particularly for disabilities related to mental health. Recent data indicate that graduate students experience mental illness at a rate much higher than that of the general population (Evans et al. 2018). Efforts to acknowledge and address the barriers faced by individuals living with disabilities are needed to make our society and our discipline more accessible and welcoming for all.

### **Languages**

In addition to English, 30% of respondents speak French and 10% speak Spanish (Fig. 3). Indigenous languages, Chinese (Cantonese and Mandarin), and Portuguese are each spoken by 2% of respondents. Dutch, German, Greek, Hungarian, Indian, Italian, Michif, Nawat, Swedish, and Tamil, are each spoken by 1% of respondents. In comparison, the 2021 Census

canadienne. Toutefois, les estimations relatives aux populations autochtones du Canada sont affectées, plus que la plupart des variables, par le dénombrement incomplet de certaines réserves et communautés dans le recensement de la population de 2021. Certaines personnes ont également autodécris leur minorité visible, leur origine ethnique ou leur identité racialisée comme étant afro-caribéenne, caribéenne mixte, indienne, juive et/ou nahua. Ces personnes sont incluses dans la catégorie « autre » afin d’éviter d’identifier les personnes ayant répondu, en raison des faibles taux de réponse pour certaines identités (tableau 1).

Certains des termes et concepts utilisés dans le sondage ÉDI sont différents de ceux utilisés dans le recensement canadien de 2021; cependant, le contraste de ces résultats fournit des indications précieuses sur la communauté SEC par rapport à la population canadienne en général, bien que les inférences doivent être faites avec prudence.

### **Situations de handicap**

Treize pour cent des personnes ayant répondu ont déclaré vivre avec un ou plusieurs handicaps. L’Enquête canadienne sur l’incapacité de 2017 a identifié qu’une personne sur cinq (22%) de la population canadienne âgée de 15 ans et plus avait un ou plusieurs handicaps, les handicaps liés à la douleur, à la flexibilité, à la mobilité et à la santé mentale étant les types de handicap les plus courants (Morris et al. 2018). Le faible niveau de handicap déclaré par les personnes ayant répondu au sondage par rapport à la population canadienne pourrait résulter du fait que les personnes en situation de handicap rencontrent des obstacles pour accéder et participer pleinement à notre Société, à l’entomologie et/ou à l’enseignement supérieur (Friedensen et al. 2021). Cela peut également indiquer que la SEC ne fait pas un bon travail pour soutenir et retenir les membres en situation de handicap. La stigmatisation peut également influencer la probabilité que les personnes s’identifient comme handicapées, en particulier pour les handicaps liés à la santé mentale. Des données récentes indiquent que la communauté étudiante des cycles supérieurs est confrontée à la maladie mentale à un taux beaucoup plus élevé que celui de la population générale (Evans et

indicates that 29% of the Canadian population speaks French, 3.7% speak Chinese, 1.6% speak Spanish, and 0.5% speak Indigenous languages (Statistics Canada 2022).

### Take-home message

These basic demographic data are a starting point for understanding the composition of our Society and working toward improving access, representation, and retention in the ESC and our profession. The survey generally reflects the diversity of Canada's population in several ways such having a significant diversity of languages spoken. However, the survey results suggest that the ESC is overrepresented by white-identifying individuals, compared to the greater Canadian population. The

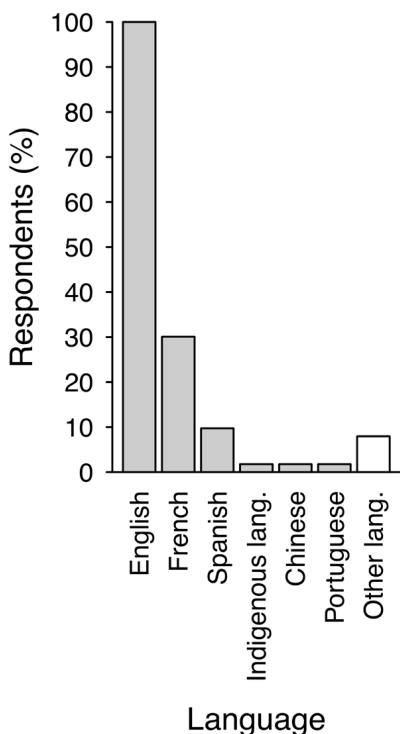
al. 2018). Des efforts visant à reconnaître et à éliminer les obstacles auxquels sont confrontés les individus vivant avec un handicap sont nécessaires pour rendre notre société et notre discipline plus accessibles et accueillantes pour tous.

### Langues

En plus de l'anglais, 30% des personnes ayant répondu parlent le français et 10% l'espagnol (Fig. 3). Les langues autochtones, le chinois (cantonais et mandarin) et le portugais sont chacun parlés par 2% des personnes ayant répondu. Le néerlandais, l'allemand, le grec, le hongrois, l'indien, l'italien, le michif, le nawat, le suédois et le tamoul sont chacun parlés par 1% des personnes ayant répondu. En comparaison, le recensement de 2021 indique que 29% de la population canadienne parle le français, 3,7% le chinois, 1,6% l'espagnol et 0,5% les langues autochtones (Statistics Canada, 2022).

### Message à retenir

Ces données démographiques de base constituent un point de départ pour comprendre la composition de notre société et travailler à l'amélioration de l'accès, de la représentation et de la rétention au sein de la SEC et de notre profession. Le sondage reflète généralement la diversité de la population du Canada à plusieurs égards, comme la diversité importante des langues parlées. Cependant, les résultats du sondage suggèrent que la SEC est surreprésentée par des personnes s'identifiant comme étant blanches, comparativement à la population canadienne en général. La présence de personnes ayant une identité minoritaire au sein de la SEC et de notre domaine peut souvent se faire malgré les obstacles à l'inclusion et au succès (plutôt qu'en raison de l'absence de tels obstacles). Comme dans le cas de la représentation des genres, la diversité de notre communauté varie probablement en fonction de l'étape de la carrière parce que les personnes ayant une identité minoritaire ont été historiquement exclues et font encore face de façon disproportionnée à des obstacles à l'accès et au succès. Par exemple, le racisme historique et les pratiques systémiques



**Figure 3.** Languages spoken by respondents to the ESC EDI survey / Langues parlées par les personnes ayant répondu au sondage de la SEC sur l'ÉDI.

presence of individuals with minoritized identities in the ESC and in our field may often occur in spite of barriers to inclusion and success (rather than due to an absence of such barriers). As with gender representation, the diversity of our community likely varies with career stage because individuals with minoritized identities have historically been excluded and still disproportionately experience barriers to access and success. For example, historical racism and current systemic practices limit the participation of Black, Indigenous, and People of Colour in entomology specifically (Evangelista et al. 2020), and LGBTQ2+ professionals in STEM fields disproportionately experience harassment, discrimination, and career limitations relative to their non-LGBTQ2+ peers (Cech & Waidzunas 2021). At present, the ESC community does not appear to reflect the broader population in terms of disability status and gender identity, and it continues to be dominated by white-identifying individuals. There certainly is work to be done to remove barriers to participation and success and to actively support and retain diverse individuals across all career stages in Canadian entomology.

We acknowledge that the results presented here are biased, as members who received the link self-selected to complete the survey. We also recognize that the participants who completed the survey show survivor bias; for example, anyone who had already left the society because they found it unwelcoming would not be captured in our results. Nevertheless, these results can help the society understand how we can better support our members.

In the next issue of the *Bulletin* we will report on the survey results in terms of attitudes and beliefs toward Equity, Inclusion, and Diversity.

### **A note about the survey design:**

We are aware that the design of this survey may have made it frustrating and/or difficult to complete and we appreciate the feedback many respondents provided about both the format of the survey and the wording of the

actuelles limitent la participation des personnes noires, des Autochtones et des personnes de couleur dans le domaine de l'entomologie en particulier (Evangelista et al. 2020), et de la communauté professionnelle LGBTQ2+ dans les domaines des STIM est victime de façon disproportionnée de harcèlement, de discrimination et de limitations de carrière par rapport à leurs homologues non LGBTQ2+ (Cech & Waidzunas 2021). À l'heure actuelle, la communauté de la SEC ne semble pas refléter l'ensemble de la population en termes de situation de handicap et d'identité de genre, et elle continue d'être dominée par des personnes s'identifiant comme blanches. Il y a certainement du travail à faire pour éliminer les obstacles à la participation et à la réussite et pour soutenir activement et retenir des personnes diverses à toutes les étapes de leur carrière en entomologie canadienne.

Nous reconnaissions que les résultats présentés ici sont biaisés, car les membres qui ont reçu le lien ont eux-mêmes choisi de répondre au sondage. Nous reconnaissions également que les participants qui ont répondu au sondage présentent un biais de survivant; par exemple, toute personne ayant déjà quitté la société parce qu'elle la trouvait peu accueillante ne serait pas prise en compte dans nos résultats. Néanmoins, ces résultats peuvent aider la société à comprendre comment nous pouvons mieux soutenir nos membres.

Dans le prochain numéro du *Bulletin*, nous rendrons compte des résultats du sondage en termes d'attitudes et de croyances envers l'équité, l'inclusion et la diversité.

### **Une remarque sur la conception du sondage :**

Nous sommes conscients que la conception de ce sondage a pu le rendre frustrant et/ou difficile à remplir et nous apprécions les commentaires de nombreuses personnes ayant répondu au sujet du format du sondage et de la formulation des questions. Nous nous efforcerons de faire en sorte que les prochains sondages soient plus soigneusement conçus et accessibles à tous les membres. Nous encourageons les membres de la SEC à nous faire part de toute suggestion, question ou

questions. We will work to ensure that future surveys are more carefully constructed and accessible for all members. We encourage ESC members to share any suggestions, questions, or concerns about the EDI Committee's work by contacting the EDI Director (Sebastian Ibarra: [sebsibarra@gmail.com](mailto:sebsibarra@gmail.com)).

préoccupation concernant le travail du Comité de l'ÉDI en contactant l'administrateur de l'ÉDI (Sebastian Ibarra : [sebsibarra@gmail.com](mailto:sebsibarra@gmail.com)).

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## Wider aspects of a career in entomology.

### 20. Further field adventures

Hugh V. Danks

*This series of articles outlines some ancillary aspects of my entomological career, for the potential amusement of readers. It reports the sometimes-unexpected challenges of working in new places and in the real world, an approach that serves also to expose some conclusions about entomological activities, and some information about insects and their environments. This article recounts further experiences in Canadian habitats, including interactions with biting flies.*



My introduction to Canada's fauna and environments (outlined in *ESC Bulletin* 54: 11–20; 54: 66–75; 54: 128–136) was extended on two main fronts. First, additional experiences stemmed from entomological research beyond my initial focus on the overwintering of chironomid midges. Second, explorations of natural habitats continued with members of my family.

Professional activities in summer included participation in a project to assess the bottom fauna of lakes in Gatineau Park, Quebec. One of those habitats, Pink Lake (Figure 1), yielded a surprising result when the central sediments were sampled with an Ekman dredge (Figure 2)<sup>1</sup>. The sample was full of unusual light brown flocculent material. Sampling was repeated multiple times, whilst carefully feeling for the bottom in case it had been missed—but always with the same result.

Laboratory study of the samples confirmed that they contained no benthic invertebrates, unlike sediments from the other lakes, which were rich in chironomid larvae and other organisms. Evidently, Pink Lake is so small and steep-sided that it lacks the annual circulation typical of lakes at this latitude<sup>2</sup>. Therefore, deep central areas are anoxic all year, eliminating invertebrate colonists. The lack of circulation also makes the lake particularly susceptible to human disturbance. For example, peripheral substrates stirred up by swimmers, or products introduced by visitors, might settle into deeper water and stay there indefinitely. This feature of Pink Lake was unknown until then, but its discovery helped park authorities to develop appropriate guidelines for use of the lake.

My entomological activities in winter revealed more than insects. Mammals leave distinctive tracks in the snow. Several species of birds forage under bark to supplement their winter diets with dormant insects, and a few, like chickadees, even exploit larvae overwintering in cattail seed heads and goldenrod galls (see *ESC Bulletin* 53: 188, 191).

<sup>1</sup>The Ekman dredge is lowered in the open position shown in Figure 2. After it reaches the bottom, a messenger is sent down the line to close the jaws, allowing the sample to be retrieved.

<sup>2</sup>Water in most temperate lakes turns over (circulates completely) twice per year. In summer, surface water warms up and forms a layer above the cool deep water (water is heaviest at 4°C, and progressively lighter at higher and lower temperatures). In winter, the surface is covered by ice (ice is much lighter than liquid water). As the surface water cools in fall, or warms after the ice melts in spring, the density gradient causing stratification breaks down, and the upper layers are mixed with deeper layers by wind and gravity, bringing oxygen to the sediments. In some lakes in which the basin is deep and narrow, the deepest waters do not mix and the lake remains stratified all year. Such lakes are termed meromictic. Some lakes in which the deep water is saline, increasing its density, are also meromictic.

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Hugh Danks ([hughdanks@yahoo.ca](mailto:hughdanks@yahoo.ca)) retired in 2007 after many years as head of the Biological Survey of Canada. In that role, he helped to coordinate work on the composition and characteristics of the arthropod fauna of the country, and to summarize the results. In addition, his research studied cold hardiness, diapause, and other adaptations to seasonality in northern regions.

H. Danks



Figure 1. Pink Lake in 1969 (Gatineau Park, National Capital Region, Quebec).



Figure 2. Ekman dredge.

Cole-Palmer Canada



Figure 3. Snowmobiles in the woods.

Peter Redman (CC BY-SA 3.0)



Figure 4. Goldenrods in flower.

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Figure 5. Car “parked” in the ditch, a regular sight in winter.

Ann (CC BY-NC-SA 2.0), modified

My winter forays were disturbed occasionally by snowmobilers (Figure 3). Snowy places are quiet because of the snow blanket, so that the sudden arrival of snowmobiles is inordinately disruptive, especially when they are steered by groups of fanatics driving at excessive speed.

Some winter experiences stemmed from attempts to collect insect galls on goldenrod stems. The galls (illustrated in ESC *Bulletin* 53: 190–191) are usually present wherever the hostplants are abundant, and therefore the easiest way to find potential collecting sites is to drive around during August and look for the bright yellow flowers, which stand out from a distance (Figure 4). Targeted winter collections can then be made relatively quickly, whereas roaming across fields to look for plants when they are not in flower takes much longer. Many of the neglected fields colonized by goldenrods are close to civilization, so lengthy searches also increase exposure to the stares of mystified passers-by.

Identifying suitable localities in summer has another advantage: safe places to park in winter can be found at the same time. It is possible to overestimate the width of the shoulder when pulling on to the snow-covered side of the road in an unfamiliar place, and to end up in the ditch (cf. Figure 5). Even after the car has been safely parked, the snow-filled ditch at the edge of the road is a potential barrier. Floundering across to collect the galls (or cattails, for example) is best avoided by wearing snowshoes.

After an extended snowstorm, the car might get stuck in the deep snow at the edge of the road. When this happened to me, I tried to rationalize my efforts to free the vehicle as useful driver training—although this sanguine attitude tended to fade as the day wore on and the temperature dropped!

One journey almost ended more dangerously, after I was forced to stop near the top of a steep and icy hill because a car suddenly appeared on an intersecting road. It was impossible to continue up the ice-covered slope from a standing start. Backing down to try a second climb came within a hair's breadth of disaster. It is difficult enough to maintain control when driving down a slippery hill that is long and steep enough to need significant braking. It is much more difficult backwards.<sup>3</sup>

Some fields with goldenrods contain common weeds that disperse their seeds by means of burs (e.g., Figure 6). These hooked or barbed fruits, which have evolved to cling to animal fur, readily attach to gloves and clothes, and may become securely embedded in wool and other insulating fibres. Brushing against bur-laden plants led to lengthy struggles to remove the burs, and it took hours to liberate a pair of woollen mittens worn during an early encounter—serving as a lesson to wear only gloves with a hard leather surface.

Many overwintering galls of the goldenrod gall fly were gathered near Ottawa to ship to British Columbia for a joint project at the University of Victoria (outlined in *ESC Bulletin* 53: 192). It was essential to keep the galls cold until they reached their destination. Stems with galls were collected directly into a cooler (to guard against warmth from the vehicle interior), then surplus lengths of



Figure 6. Burs of burdock.

Prosthetic Head (CC BY-SA 4.0)



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Figure 7. An early encounter. Paul Danks admiring a dragonfly (the libellulid *Sympetrum* sp.) on his shoulder when he was 4 years old.

stem were trimmed off out of doors, and finally the galls were transferred to a large, prechilled, high-performance vacuum bottle, which could be placed inside an insulated container for shipping.

Despite these precautions, some shipments came close to being ruined by the cavalier attitude of a few of the couriers entrusted to deliver them. Delays in these and other shipments showed that some couriers are unreliable, and will leave urgent express packages sitting in airports for many hours.

Similar frustrations in summer were assuaged by spending leisure time in natural environments, especially hiking with my wife Thelma, and camping with our children. Insects were often seen, of course, even early on (e.g., Figure 7). Typical explorations included hiking during the day (Figure 8) followed by relaxation in the evening (Figure 9).

However, every camping vacation seemed to take place during the wettest possible period. Consequently, even when the children were too young to know about Murphy's Laws of Fieldwork, they had an instinctive feel for them. One summer I was seated on the front step at home on a day

<sup>3</sup>At the time, anti-lock braking systems were not available, except for a few elite cars.



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Figure 8. Starting a trail. L to R: Paul, David, and Philip Danks, about 7–10 years old (Arrowhead Provincial Park, Ontario).

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Figure 9. Around the campfire. L to R: Paul, Philip, and David Danks, about 5–8 years old (Silent Lake Provincial Park, Ontario).

paddled a long way up the lake to admire the boreal scenery, observe the fauna, and fish in the bays. The campground lay far behind us as dark clouds started to build up (Figure 10), and then thunder began in the distance. Exposed on the lake and worried about lightning, we made for the nearby shore, and reached it just as a torrential thunderstorm began. Hunched motionless in rain gear to let the water cascade off, we were trapped on shore for nearly 2 hours as the heavy downpour continued. At last, a lull in the weather offered a chance to reach camp before more rain arrived. Paddling dementedly, and chased by the sound of thunder, we got back just before another extended thunderstorm ensued. No insects were noticed on that journey!

On another occasion, a massive storm flooded the campground, requiring me to dig a channel around the tent in the middle of the night, in pouring rain, to divert the torrent that threatened to overwhelm it. The children were still young, but learned a useful lesson: if they allowed their sleeping bags to touch a soaking wet tent, water would penetrate the tent fabric and saturate the bedding. Drying everything out after such an episode was time-consuming (Figure 11).

The pervasive dampness did have some advantages. For example, it often highlighted the abundance of spiders (Figure 12). In such conditions, webs may glisten with moisture, increasing the visibility not only of the scattered orb webs of large araneids, but also the thousands of sheet

that was unusually dull and rainy. One of the boys hurtled outside, but suddenly stopped. He looked up at the dismal sky. “Dad,” he said, “are we going camping?”

Years later, another son noted that his exposure to camping (apart from instilling a love of the outdoors) proved useful in later life, because when it rained he would simply continue what he was doing, whereas most of his companions scurried for cover. I had already discovered that such a viewpoint is useful for entomological fieldwork.

The inevitability of rain was demonstrated many times. One day we had



Figure 10. Darkening sky.



Figure 11. Campsite after a massive rainstorm (Grundy Lake Provincial Park, Ontario).

webs built everywhere by tiny linyphiids, and the tangle-webs of theridiids.

Nevertheless, the most consistent “entomological” experience was the prevalence of biting flies. Biting midges were only rarely abundant, although the sensation of being jabbed with many tiny invisible needles came a few times whilst setting up camp in grassy areas in the Maritime provinces. “No-see-ums” are aptly named.

In contrast, mosquitoes were nearly always present (e.g., Figure 13). One hot, humid day was noteworthy for huge numbers of voracious mosquitoes, excessive even by Canadian standards. Overnight, however, the temperature dropped so sharply that not a single one was seen the following day ... so everyone complained about the unseasonable cold instead!

Mosquitoes in some boreal and subarctic habitats are so numerous, and the constant bites and whine of wings of blood-seeking females so stressful, that workers there have been known to break down mentally and then run madly away. More than once I felt particular sympathy for them<sup>4</sup>. Caribou sometimes show similar behaviour, driven by mosquitoes or warble flies.

Horse flies and deer flies were often encountered as well, and their bites caused extensive and painful inflammation. Many species are abundant near wetlands, as when we camped at Kouchibouguac National Park in New Brunswick. Few other users were present, perhaps because at that time the park was relatively new; but perhaps too because visitors had been driven away by the attacks of biting flies. In particular, overwhelming numbers of the salt-marsh horse fly (Figure 14) had emerged recently from the extensive salt-marshes.

Elsewhere, biting flies sometimes drove us away too. A landing site on the beautiful rocky, wooded shoreline of a lake in Ontario (Figure 15) seemed an ideal place for us to stretch our legs and take lunch. We came ashore, secured the canoe, and settled down ... only to be set upon by scores of deer flies. They were so bad that, abandoning all other thoughts, we leapt back into the canoe, and paddled out—dementedly again—to reach an exposed part of the lake, where the wind could blow away the last of the horde of flies that had accompanied us as we left the shore. The species was or were uncertain (although probably the one shown in Figure 16)

<sup>4</sup>Some expeditions embraced this abundance instead. One of the Northern Insect Survey parties reputedly held a competition in which each person would briefly put their bare arm out into the throng of mosquitoes trying to gain access to the tent, then rapidly draw it in and try to swat as many individuals as possible with their other hand. The crew must have been *really* bored, because the winner acquired dozens of individuals.



H. Danks

H. Danks

Figure 12. Spider webs on vegetation. Note the many water droplets on the webs in the bottom photograph.



Judy Gallagher (CC BY 2.0)

Figure 13. Mosquito common in Canadian woodlands, the culicid *Ochlerotatus* (formerly *Aedes*) *canadensis*, which aggressively bites a wide range of hosts during the day. Length about 0.6 cm.



A.W. Thomas (CJA)

Figure 14. Salt-marsh horse fly, the tabanid *Tabanus nigrovittatus*. Length about 1 cm. Image from *Canadian Journal of Arthropod Identification*.



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Figure 15. Canoe landing site mentioned in the text (Grundy Lake Provincial Park, Ontario).

because no specimens had been examined in detail or secured when self-preservation seemed more important.

One member of the family had severe local inflammation after black fly bites, and also a toxic reaction, producing nausea, headaches, and malaise. Comparable reactions are not uncommon, and may include fever and joint pain; in fact, toxic shock syndrome from too many black-fly bites can kill birds and even cattle. In any event, all of us had severe *verbal* reactions to the long-lasting itchiness of the bites, and so did not camp at the beginning of summer.

Early one June as we drove through the countryside, however, we did stop to admire a stunning waterfall. Within seconds, a dense cloud of black flies enveloped us, and we scrambled back into the car as frantically as we had once catapulted into the canoe to flee from deer flies.

Happily, not all of our experiences were dominated by biting flies. Canoeing and hiking brought us close to many aquatic insects, including some of the dragonflies characterized in ESC *Bulletin* 54: 70–75.

One memorable journey saw us on an isolated lake, patrolled by a few dragonflies. The water was so still that the clouds and their reflections matched (Figure 17), giving a strange feeling of disorientation between the sky and the lake, and making the lake seem bottomless as we paddled across it. An eerie mist rose too as the evening cooled. The stillness was disturbed only when a colony of muskrats deemed that we were passing too close to their lodge.



A.W. Thomas (CJA)

Figure 16. A common Canadian deer fly, the tabanid *Chrysops vittatus*. Length up to about 1 cm. Image from *Canadian Journal of Arthropod Identification*.



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Figure 17. Lake reflections mentioned in the text (Parc national du Lac-Témiscouata, Québec [a provincial park, not a national park of Canada]).



Figure 18. Whirligig beetle, the gyrinid *Gyrinus* sp.  
Length about 0.6 cm.

parks, but discovered that each park has its own personality, which depends on size, facilities, terrain, and prospective use. In particular, natural environment parks were much preferable to those intended for recreational boating, swimming, and picnicking. Areas that permit power boats on lakes and powered vehicles on trails (e.g., Figure 19) have diminished opportunities for quiet enjoyment and observation of birds and insects. The disruptions parallel those caused by snowmobiles in winter.

We sometimes stopped during a journey at unsuitable locations because places labelled on maps as “parks” were defined differently by different jurisdictions (and internet research was not yet possible). Some sites were very small, with little access to anything; some were just a boat launch; a few proved to be merely highway rest-stops with one or two picnic tables, where the abundance of visiting human hosts favoured the reproduction of biting flies.

On the other hand, the large unspoiled parks we preferred were not always in good condition throughout. Trails might include bridges of uncertain stability (Figure 20), or end at closed-off sections (Figure 21). Loose and broken planks on boardwalks were a frequent hazard.

Several campgrounds were memorable for the humans we met, rather than for other organisms. One gentleman was trying to find the campsite he had booked, and desperately asked

Greatly favoured by the children were whirligig beetles (Figure 18), which could be watched spinning on the surface and also caught in a pond net to reveal eyes split horizontally into two sections, enabling the beetles to see both above and below the water. Occasionally, lucky timing revealed mass emergences of caddisflies or mayflies.

The camping lantern attracted chironomids, mayflies, and various terrestrial species (such as those shown in ESC Bulletin 54: 132). The shining golden eyes of green lacewings that settled around the lantern were particularly appealing. Some moths have similar eye-shine.

We visited mainly national and provincial



Figure 19. All-terrain-vehicle rider “enjoying nature” on a trail.

CC0 (MaxPixel.net)

the abundance of visiting human hosts favoured the



Figure 20. Insecure bridge over a stream on a hiking trail.



Figure 21. Closed-off section of a hiking trail.

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directions as it was getting dark. His destination lay 30 km to the south, but he had accidentally taken a similarly numbered highway.

A first-time camper wondered why he could not generate a blazing fire, while his young children waited anxiously beside him to toast the marshmallows they had been promised. He had laid a few bark offcuts (sold as firewood at the camp office although they were soaking wet), uncut and with no kindling, on a flat sheet of newspaper, and ignited one corner of the sheet. He was astonished to learn that starting a fire requires structure, not just a match.

Once, bedtime had been troublesome for one of the children. Quiet finally reigned, and I sat by the lantern as a few moths circled in. A ruggedly dressed fellow came over from another campsite. "Eh," he said, "me and me mates are on motorbikes, eh, and we've run out of beer. We'll pay you to go off and get some for us in your car, eh." The children were too young to be left alone at the campsite anyway, but I responded: "Sorry, I can't leave, because one of my boys has been playing up." "Oh," he replied, "Just give 'im an 'it to the 'ead!", as he accompanied these words with a matching gesture!

Subsequently, I saw the identical manner portrayed with great accuracy in television comedy sketches. "Bob and Doug Mackenzie" wielded beers and used "eh" repeatedly in two-minute parodies entitled the Great White North<sup>5</sup>.

Many years later, I gave a public talk in a local park about "Bugs at night", and the accompanying field activity examined insects drawn to a light-trap. Because this format favoured interaction with participants, the event yielded as many findings about the different characters of the people who came to the talk as it did about the different kinds of insects that came to the light.

Indeed, the experiences outlined in this series<sup>6</sup> showed not only that insects display remarkably diverse structures and adaptations, but also that humans display remarkably diverse personalities and interests. My professional involvement with large numbers of both insects and entomologists confirmed those patterns!

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<sup>5</sup>These parodies on Second City TV, 1980–1982, by Rick Moranis and Dave Thomas, were introduced to ridicule a requirement for additional "Canadian content" in a show that was essentially Canadian anyway. The sketches became popular not only in Canada, but also in the United States, eh.

<sup>6</sup>This series is no longer accepted for the *Bulletin*, so I would like to thank all of my readers over the past 5 years, and acknowledge those who expressed appreciation.



## Highlighting the Work of Canada's Insect Museums and Zoos

### Entomica Insectarium, Sault Ste. Marie

#### Christopher Lee

Entomica Insectarium is located in Sault Ste. Marie, a small Northern Ontario town that is a place to be experienced. Since 2014, Entomica Insectarium has continued to showcase the fascinating, hidden, and often misunderstood world of insects, inviting people of all ages through hands-on, interactive and educational experiences! We are proud to be Sault Ste. Marie's only insect-focused science museum that provides a unique opportunity to interact with diverse colonies of arthropods from all over the world!

Entomica is a not-for-profit insectarium currently located in the Canadian Bushplane Heritage Centre. The inspiration for starting our insectarium came from our CEO, John Dedes. Essentially, Entomica came to exist as a grassroots initiative program at our local public market, and now continues to thrive because of a dedicated team of investors, scientists, a councillor, a marketing expert, a board of directors, and staff and volunteers. One could say Entomica is right at home because of the strong association with the longstanding culture of insect research that has been conducted in Sault Ste. Marie for over fifty years. We are a member of the Canadian Association of Science Centres (CASC) and licenced and certified by the Canadian Food Inspection Agency (CFIA). Entomica is a small Insectarium-Science Centre created by local citizens for the world.

Entomica currently employs a team of three Bug Wranglers including a Manager of Operations, a Virtual Outreach Coordinator, and an Events Outreach Coordinator. Entomica's team is also compromised of many dedicated and enthusiastic volunteers, as well as our devoted Board of Directors.

Entomica was the first insectarium in Canada to be federally approved to move our insects outside of a containment facility, to participate in unique outreach programs province wide, and we are the only insectarium nationally that allows each of our guests the special opportunity for a hands-on experience with a variety of live specimens during each visit. Our outreach is extended to students, private functions, tourists, and even elders at senior centres! For those unable to attend in person, Entomica also offers a fun, engaging, and interactive Virtual Outreach Program that follows the Ontario Science Curriculum guidelines for individual grades, and includes remarkable live-insect displays with our Bug Wranglers! Fascination with entomology begins at an early age for everyone, whether it be due to interest, or fear. We share a vision and a passion and strive to inspire every visitor to connect with science and nature like they never could have imagined.

The experience begins the moment one walks through our doors; our distinctive, aesthetically designed vivarium's will allow one to catch a glimpse at our insects, and reptilians in a naturalistic display, featuring live plants and mosses. For those feeling brave, they are welcomed to personally interact with anything from insects, arachnids, or reptiles and amphibians. Our insectarium houses over 120 different species for the public to see, interact with, and learn about; Entomica Insectarium also houses marine and fresh water aquariums, which are sure to catch one's eye!

Our staff and volunteers take pride in the work that they do, because the quality of care we give, is the quality of life our colonies live. For those ready to dive into the wonderful world of insects, Entomica is the right place to be! They will leave with a new appreciation and understanding for insects, an experience that will be remembered for the rest of their lives!

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Christopher Lee ([bugchrislee@gmail.com](mailto:bugchrislee@gmail.com)) is Manager of Operations - Entomica Insectarium

### List of Entomica Awards & Achievements:

- 2019, Tourism Sault Ste. Marie Awards; Ambassador of the Year Entomica
- 2017, Royal Ontario Museum (R.O.M) Feature Presenter; Earth Day Weekend - Entomica
- 2017, Amazing Race Canada; Cockroach Cranium, 2<sup>nd</sup> Last Episode
- 2016, Sault Ste. Marie Innovation Awards; Sault Ste. Marie Innovation Centre, Innovation in Social Entrepreneurship
- 2016, Canadian Association of Science Centres (CASC); Best Program/Small Institution, Science for Seniors by Entomica
- 2016, Canadian Association of Science Centres (CASC); Making a Difference in Canada, John Dedes, Entomica



Entomica Insectarium, an interactive facility that showcases the fascinating and often misunderstood world of arthropods, reptiles, amphibians and fresh/ marine species from around the world.

## In memory / En souvenir de

Roy Shepherd was born in the foothills of the Rocky Mountains. He developed a keen interest in nature at an early age, and was active in the Boy Scouts and enjoyed mountain climbing along with his wife Colleen, who passed away in 2021. They led an active life together, enjoying hiking, backpacking, camping, skiing, sailing, curling and travelling.

After graduating from the University of British Columbia with a Bachelor of Forest Science in 1952, Roy spent the majority of his career as a research scientist with the Canadian Forest Service. Roy worked on the lodgepole needle miner and on bioclimatology as a student assistant for three summers and joined

the Division of Forest Biology permanently as an Agriculture Research Officer in

1952. In Calgary he worked on lodgepole needle miner, several species of spruce budworm, and he completed his Master of Forestry studying 2-year cycle budworm at the University of Minnesota in 1955. In addition, he worked on the mountain pine beetle, contributing greatly to our understanding of attack distribution on lodgepole pine. This work was also the topic of Roy's PhD dissertation at the University of Minnesota, which he completed in 1960. In the 1960s, Roy served as Regional Head of the Entomology Section for the Alberta Region, and later Section Head including responsibility for the running of the Mt. Eisenhower lab during the summer months; however, he preferred research over administration. He was awarded a post-doctoral transfer to Australia for one year from 1968-1969. There, he studied insect

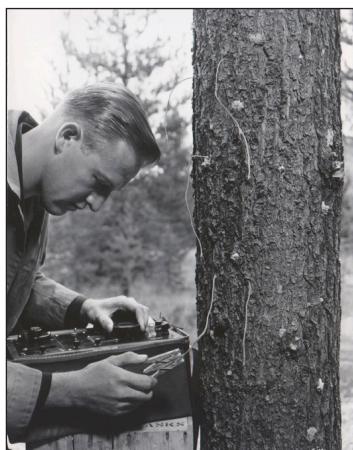
population dynamics with the Commonwealth Scientific and Industrial Research Organization, an organization similar to the National Research Council of Canada. In 1970, he transferred to the Pacific Forest Research Centre (now the Pacific Forestry Centre) in Victoria, BC, where he remained until his retirement in 1991. After his move to Victoria, he mostly worked on defoliators, including western spruce budworm and Douglas-fir tussock moth. In his research, Roy strived to provide solutions for forest managers to defoliator problems. He served as coordinator of several large defoliator spray programs using *Bacillus thuringiensis* for budworms and polyhedrosis virus for tussock moth.

Roy's talent and dedication are reflected in the following quote in a letter from Gene Amman, a prominent bark beetle researcher in his own right, sent on Roy's retirement: "Although you were only briefly a bark beetle researcher, your laboratory studies of mountain pine beetle behavior



Nancy Pinnell

Canadian Forest Service



Roy Shepherd measuring temperatures of bark beetle galleries under the bark, about 1952.

*are classic. You are one of the few persons who can boast of a successful research career in both bark beetles and defoliators. Had you elected to stay with bark beetles, I think we would be much further ahead in our understanding of them than we are now".*

In addition to his scientific work, Roy served on numerous technical committees relating to the management of damaging forest insects. He was a member of the Canadian Institute of Forestry, the regional societies of entomology in Alberta and BC, and the Entomological Society of Canada, serving the latter for a period as one of its directors as well as an Associate Editor of the Canadian Entomologist. Roy was also a long-standing member of the Western Forest Insect Work Conference, and in 1996 he was the first entomologist working in Canada to be awarded this organization's prestigious Founders Award. He presented his Founders Award address at the WFIWC meeting in Prince George, BC in 1997. In his address he acknowledged his wife and Tom Gray, his research technician of 22 years. The mutual respect of Roy and Tom for each other was clearly evident, and Tom was in fact the nominator of Roy for the award.

Roy's response to the announcement that he had been selected says a lot about his personality. He wrote: "*I am very pleased and honoured to receive this award, but quite humbled by the thought that I would even be considered as a recipient. It seems to me that there are many brighter stars in the sky of forest entomology compared to my small pin prick*". Roy was generous with advice to students and colleagues, and he served on the supervisory committees for a number of students at Simon Fraser University and the University of BC, and he was Adjunct Professor at UBC from 1985 until his retirement.

Roy passed away on June 4 shortly after a stroke. He is mourned by his children Loraine (& Nancy) and Keith (& Patty) and grandchildren Trevor and Sarah, as well as his many friends and colleagues in Canada and the USA.

Staffan Lindgren and Les Safranyik (with help from Loraine MacKenzie Shepherd)



R. Shepherd

Roy Shepherd's family, Christmas 2012. Front row: Roy, his wife of 66 years Colleen, and their granddaughter Sarah; back row: grandson Trevor, daughter-in-law Patty and her husband Keith (son), Nancy Pinnell and her partner Loraine (daughter).

# **Books available for review / Livres disponibles pour critique**

The ESC frequently receives unsolicited books for review. A list of these books is available online (<http://esc-sec.ca/publications/bulletin/#toggle-id-2>) and is updated as new books are received.

If you wish to review one of these books, please send an email to the Chair of the Publications Committee (Véronique Martel, [veronique.martel@NRCan-RNCan.gc.ca](mailto:veronique.martel@NRCan-RNCan.gc.ca)).

You should briefly indicate your qualifications to review the topic of the book, and be able to complete your review within 8 weeks.

Preference will be given to ESC members.

## **Guidelines**

Book reviews should be approximately 800-1200 words in length. They should clearly identify the topic of the book and how well the book meets its stated objective. Weaknesses and strengths of the book should be described.

Formatting of the review should follow that of reviews in recent issues of the Bulletin. A scan of the book cover (jpeg or tiff format, about 500 kb) should be submitted with the review.

La SEC reçoit fréquemment des livres non demandés pour des critiques. Une liste de ces livres est disponible en ligne (<http://esc-sec.ca/publications/bulletin/#toggle-id-2>) et est mise à jour lorsque de nouveaux livres sont reçus.

Si vous souhaitez critiquer un de ces livres, veuillez envoyer un message au présidente du comité des publications (Véronique Martel, [veronique.martel@NRCan-RNCan.gc.ca](mailto:veronique.martel@NRCan-RNCan.gc.ca)).

Vous devez brièvement indiquer vos qualifications pour critiquer le sujet du livre, et être en mesure de terminer votre critique en 8 semaines.

La préférence est donnée aux membres de la SEC.

## **Lignes directrices**

Les critiques de livre doivent compter entre 800 et 1200 mots. Elles doivent clairement identifier le sujet du livre et si le livre rencontre bien les objectifs énoncés. Les forces et faiblesses du livre devraient être décrites.

Le format des textes doit suivre celui des critiques des récents numéros du Bulletin. Une version numérisée de la couverture du livre (en format jpeg ou tiff, environ 500 kb) devra être soumise avec la critique.

## **Books available for review**

- Blomquist, G. and Vogt, R. [Eds.]. 2021. Insect Pheromone Biochemistry and Molecular Biology. Elsevier Inc. ISBN: 978-0-12-819628-1. [e-book].
- Delaplane, K. 2021. Crop Pollination by Bees, Volume 1. Evolution, Ecology, Conservation and Management. CABI. ISBN: 9781786393494. [e-book].
- Eiseman, C. 2019. Leafminers of North America. Self-Published [e-book].
- Forman, R.T.T. 2019. Towns, Ecology and the Land. Cambridge University Press. ISBN 978-1-316-64860-5 [paperback].
- Frank, B., Klikman, J.A. and Marchini, S. 2019. Human-Wildlife Interactions. Turning conflict into coexistence. Cambridge University Press. ISBN: 978-1-108-40258-3 [paperback].
- Gibson, D.J. and Newman, J.A. [Eds.]. 2019. Grasslands and Climate Change. Ecological Reviews. Cambridge University Press. ISBN: 978-1-316-64677-9 [paperback].
- Hölldobler, B. and Kwapisch, CL. 2022. The Guests of Ants: How Myrmecophiles interact with Their Hosts. Harvard University Press. ISBN 9780674265516.
- Kaufman, A.B., Bashaw, M.J. and Maple, T.L. [Eds.]. 2019. Scientific Foundations of Zoos and Aquariums: Their Role in Conservation and Research. Cambridge University Press. ISBN: 978-1-316-64865-0 [paperback].
- Keddy, P.A., and Laughlin, D.C. [Eds.]. 2022. A Framework for Community Ecology. Cambridge University Press. ISBN 978-1-009-06831-4 [e-book or paperback].

- Klimaszewski J., et al. 2020. Synopsis of Adventive Species of Coleoptera (Insecta) Recorded from Canada. Part 5: Chrysomeloidea (Cerambycidae, Chrysomelidae, and Megalopodidae). Advanced Books. [e-book] doi: 10.3897/ab.e50613.
- Kondo, T. and Watson, G. [Eds]. 2022. Encyclopedia of Scale Insect Pests. CABI. ISBN: 978-1-80062064-3.
- Pettorelli, N., Durant, S.M. and du Toit, J.T. [Eds.]. 2019. Rewilding. Cambridge University Press. ISBN: 978-1-108-46012-5 [paperback].
- Volis, S. 2019. Plant Conservation: The Role of Habitat Restoration. Cambridge University Press. ISBN: 978-1-108-72733-4 [paperback].
- Wilson, K., Fenton, A., Tompkins, D. [Eds.]. 2019. Wildlife Disease Ecology. Linking theory to data and application. Cambridge University Press. ISBN: 978-1316-50190-0 [paperback].
- Wrigley, R.E. 2020. Chasing Nature: An Ecologist's Lifetime of Adventures and Observations. Robert E. Wrigley and Friesen Press. ISBN: 978-1-5255-5586-2 [hardcover], 978-1-5255-5587-9 [paperback], 978-1-5255-5588-6 [e-book].
- Wrigley, R.E., de March, L., and Huebner, E. 2022. Tiger Beetles of Manitoba: Ecology, Life History and Microsculpture. Robert E. Wrigley. ISBN: 978-1-7781065-0-7 [paperback].
- Ziska, L. 2022. Invasive species and global climate change, 2<sup>nd</sup> Edition. CABI. 978-1-80062-143-5. [hardcover].

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## Book review / Critique de livre

**The Mind of a Bee.** Chittka, L. 2022, Princeton University Press, Princeton, USA. 260 pp. ISBN 978-0 691-18047-2, CAN \$37.62, cloth.

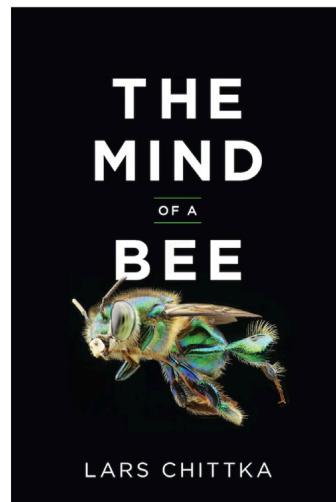
This book is simply amazing! It is at once scholarly, hugely informative, eclectic and evocative. Any entomologists, or other biologists who is interested in comparative psychology should read this truly remarkable volume. What we know, from Chittka's book, about the minds of bees gives pause to preconceptions about the limits of cognition, learning, intelligence and appreciation of the environment for animals other than human beings.

Each chapter starts with some firm and interesting historical and philosophical few paragraphs, making informed reference to early literature (mostly from 19<sup>th</sup> Century) before delving into contemporary research. The exposés of contemporary research focus mostly on Chittka's extraordinary experience and so may be considered somewhat autobiographical. That, in my mind, is not a fault but a strength. It emphasizes Chittka's depth and breadth of understanding of the material, and his thoughtfulness on context. Of course, there are ideas that receive short shrift, even in the extensive notes and bibliographies given in the final section of the book.

Chapter 2 "Seeing in Strange Colors" provides in-depth insights into how colour vision and appreciation works for bees, with their mostly trichromatic visual system (UV, blue, and yellow-green as humans would name bees' three primary colours). Understandings of insect colour vision advanced quickly through the latter part of the 1960s with the recognition that the photic environment included appreciation of daylight and its spectrum, spectral reflectance of backgrounds against which objects of interest to insects (especially flowers for bees), and how to measure and name the colours of those objects. It is a pity that the Canadian pioneering research (1970s forward) on those subjects is all but ignored, in particular the fundamental concept that colour vision requires consideration of the entire daylight (environmental) spectrum and not ascribing almost magical properties to one waveband (UV).

Chapter 3 "The Alien Sensory World of Bees" introduces a host of other sensory capacities exhibited in bee behaviour. Closely allied to vision, the sun-compass and appreciation of polarized light is explained clearly in terms of bees' orientations, foraging, and dance-language. Chittka's discourse explains bees' sensitivities to magnetic fields and electrical fields, long suspected but only recently proven. The strangest sense organs are the antennae. Much of bees' chemosensory (smell and taste) abilities are mediated through the exoskeleton by specialized and not-so-specialized sensilla. Mechanical sensitivity (the sense of feel) is well explained, but initial work on this sensory modality leading to the demonstration of the appreciation and cognition of micro-Braile by bees in Canada in mid-1980s is conspicuously ignored. With mechanosensitivity comes hearing, often overlooked by bee biologists – Yes, bees can hear.

The next Chapter (4 "It's Just Instinct" – or Is It?) takes readers on a thoughtful ride via the relationships between reflex instinct through to learning. The overall rational conclusion is that instinct, in all its forms through to ability to learn complexities of the environment and how to react to them, comprise a vast array of evolutionarily intertwined adaptations. Chittka builds on those considerations in Chapter 5 in which "The Roots of Bee Intelligence and Communication" are explored. From here, Chittka's insights and depth of knowledge are well presented in Chapters



6 “Learning About Space” and 7 “Learning About Flowers”. Chapter 8 “From Social Learning to “Swarm Intelligence” explores bee’s abilities to learn from each other, not just through behaviours like the ‘dance-language’ but also through watching each other perform complex tasks. Learning in bees may be modelled mathematically through considering learning curves in which bees show the expected capacity to perform tasks with greater speed and accuracy as experience (learning) is gained. Some readers, including myself, may consider some few aspects of those Chapters, somewhat shallow although they are, within limits, comprehensive. Chapters 4 through 8 rely heavily on the content of Chapters 2 and 3 and do place the information into context for the ensuing chapters.

Chapter 9 “The Brains Behind It All” takes the reader into the ‘nuts and bolts’ of bees’ brains. It is clear, explanatory, and anatomically precise. Certainly, readers will be astounded by the capacity of so little matter and that so few neurones can accomplish such amazing feats of sensory discrimination, learning, and behavioural adaptation to ever-changing environmental stimuli. It is interesting that this chapter comes at the end of the book. It provides somewhat of a synthesis, especially as it delves into ““Personality” Differences between Bees” (Chapter 10) and then, finally, readers are asked by Chapter 11 to consider “Do Bees Have Consciousness?”. I, too, leave this question open for readers to ponder.

The “Notes and Bibliography” are 30 pages long. They provide an immense amount of background material but are not encyclopaedic. Readers who want to know more about the context of each of the chapters are urged to consult this part of the book, but then to look further for fuller and sometimes more objective information.

The illustrations are well presented and pertinent.

Peter Kevan, University of Guelph

The advertisement features a black and white photograph of a large, reddish-brown beetle with prominent mandibles and antennae, centered against a white rectangular background. To the right of this image, the company name is displayed in large, bold, serif capital letters: "ATELIER JEAN PAQUET INC.". Below this, the text "MATÉRIEL ENTOMOLOGIQUE" and "ENTOMOLOGICAL SUPPLIES" is written in a smaller, bold, serif font. Further down, the email address "Courriel: jeanpaquet@webnet.qc.ca" and the website "www.atelierjeanpaquet.com" are provided in a standard serif font.

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## Call for Nominees: ESC Achievement Awards / Appel à candidature: 2023 Prix d'excellence de la SEC

Do you know a well-respected entomologist who deserves recognition because of their outstanding contributions to their science in Canada? Is this person a leader in their field due to successes in publishing, patenting, editorial work and/or grantsmanship, in the teaching and mentoring of students, or through active volunteer involvement in the ESC and other societies/organizations? If yes, consider nominating them for one of our Society's Achievement Awards. Do not hesitate to contact the Chair of the Achievement Awards Committee, Colin Favret ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), if you have any eligibility or nomination process questions.

Applications are to be sent by e-mail to the Chair of the Achievement Awards Committee, Colin Favret ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), no later than **28 February 2023**. Award-specific nomination guidelines can be found below.

### Gold Medal and C. Gordon Hewitt Awards Médaille d'or et prix C. Gordon Hewitt

*Both awards are for outstanding entomological contributions in Canada by an individual. The C. Gordon Hewitt Award nominee must have successfully defended their doctoral thesis in the 12 years ending on 31 December of the year in which the Award is received.*

Nominations can only be made by members of the ESC, and signed by the nominator and by at least one seconder (also to be a member of the ESC). Nominators should include the following information for both awards: 1. The name and address of the nominee(s); 2. A statement of relevant achievements (3-5 pages) which may include but is not limited to, the following: outline of research areas, particularly major contributions; numbers of articles in refereed journals, books, book chapters, patents; editorial activities; teaching history, numbers of graduate students, teaching

Connaissez-vous un entomologiste respecté qui mérite une reconnaissance pour ses contributions remarquables dans son domaine au Canada? Cette personne est-elle un leader dans son domaine par son succès en publications, brevets, travail éditorial et/ou subventions, enseignement et mentorat d'étudiants, ou même par du bénévolat actif dans la SEC et d'autres sociétés/organisations? Si oui, considérez de la nominer pour un de nos prix d'excellence de la Société. N'hésitez pas à contacter la président du comité des prix d'excellence, Colin Favret ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), si vous avez des questions concernant l'éligibilité ou le processus de nomination.

Les candidatures doivent être envoyées soit par courriel au président du comité des prix d'excellence, Colin Favret ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), au plus tard le **28 février 2023**.

*Ces deux prix vont pour les contributions remarquables en entomologie au Canada par un individu. Le candidat/la candidate au prix C. Gordon Hewitt doit avoir défendu avec succès sa thèse de doctorat au cours des 12 dernières années se terminant le 31 décembre de l'année au cours de laquelle le prix est reçu.*

Les nominations ne peuvent être faites que par des membres de la SEC, et doivent être signées par la personne qui soumet la nomination et par au moins un autre membre de la SEC. Les personnes qui soumettent la nomination doivent inclure les informations suivantes pour les deux prix : 1. Le nom et l'adresse du nommé ; 2. Un énoncé sur les accomplissements pertinents (3-5 pages) qui peut inclure, mais ne se limite pas à : domaine de recherche, contributions majeures particulières, nombre d'articles dans des revues avec évaluation, livres, chapitres

awards; value of grants; involvement in ESC; active involvement and/or memberships in other Societies; entomological extension/ community involvement; organizing of symposia, meetings; 3. A current curriculum vitae; and 4. The name of the nominator and at least one seconder. The documentation should stress the particular achievement or achievements to be considered and not merely the general competences of the nominee. Other seconders may merely state their support, without documentation, in a letter of endorsement of the nomination. The Committee shall not prepare the documentation nor conduct research connected with it. Please send nominations by e-mail to the Chair of the Achievement Awards Committee, ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), no later than **28 February 2023**.

de livres, brevets, activités éditoriales, histoire d'enseignement, nombre d'étudiants gradués, prix d'enseignement, valeur des subventions, implication dans la SEC, implication active et/ ou adhésion à d'autres sociétés, implication dans la communauté entomologique, organisation de symposiums et réunions ; 3. Un curriculum vitae à jour ; et 4. Le nom de la personne qui soumet la nomination et au moins une personne qui l'appuie.

La documentation devrait mettre en évidence le ou les accomplissements particuliers à considérer et pas seulement les compétences générales du nominé. D'autres personnes peuvent aussi manifester leur appui, sans documentation, dans une lettre de soutien de la nomination. Le comité ne préparera aucune documentation et ne fera aucune recherche en lien avec la nomination.

Merci d'envoyer vos nominations par courriel au président des prix d'excellence, Colin Favret ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), au plus tard le **28 février 2023**.

## **Honorary Members of the Entomological Society of Canada Membres honoraires de la Société d'entomologie**

*An Honorary Member is deemed to have made an outstanding contribution to the advancement of entomology, and may be an Active Member or former Active Member of the Society at the time of nomination.*

Collectively, Honorary Members are not to comprise more than 10 members or 1% of the active membership of the Society. Nominations should be supported by at least five Active or Special Members of the Society, and are to be sent by e-mail to the Chair of the Achievement Awards Committee ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), no later than **28 February 2023**.

*Un membre honoraire est considéré comme ayant apporté des contributions remarquables à l'avancement de l'entomologie et peut être un membre actif ou un ancien membre actif de la Société au moment de la nomination.*

Collectivement, les membres honoraires ne peuvent pas totaliser plus de 10 membres ou 1% des membres actifs de la Société. Les nominations doivent être supportées par au moins cinq membres actifs ou spéciaux de la Société, et doivent être envoyées par courriel au président des prix d'excellence, Colin Favret ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), au plus tard le **28 février 2023**.

## Fellows of the Entomological Society of Canada Membres associés de la Société d'entomologie du Canada

*Fellows are deemed to have made a major contribution to entomology, and are to be Active Members of the Society at the time of nomination. Their contribution may be in any area (e.g., research, teaching, application or administration), and may be judged on the basis of contribution to and stimulation of the work of others, as well as by direct personal effort.*

Collectively, Fellows may not comprise more than 10% of the active membership of the Society. Nominations should be supported by at least four Active or Special Members of the Society, and are to be sent by e-mail to the Chair of the Achievement Awards Committee ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), no later than **28 February 2023**.

*Les associés sont considérés comme ayant apporté une contribution majeure à l'entomologie et doivent être des membres actifs de la Société au moment de la nomination. Leur contribution peut se situer dans n'importe quel domaine (e.g. recherche, enseignement, application ou administration), et ils seront jugés selon leur contribution et la stimulation au travail des autres, ainsi que par leurs efforts personnels.*

Collectivement, les **associés** ne peuvent pas totaliser plus de 10% des membres actifs de la Société. Les nominations doivent être supportées par au moins quatre membres actifs ou spéciaux de la Société et doivent être envoyées par courriel au président des prix d'excellence, Colin Favret ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), au plus tard le **28 février 2023**.

## Wanted: Applicants for the Bert and John Carr Award Recherchés : Candidats pour le prix Bert & John Carr

The Bert and John Carr Award was created in 2010 (see ESC Bulletin, June 2010 [p. 102] or September 2010 [p. 170]) to support research activities by individuals who study insect faunistics, or the natural history and taxonomy of Canada's insect fauna. Preference is given to applications by amateurs, but those by students and others will be considered.

Applications should consist of: 1. The name and address of the applicant; 2. A statement of the research activity to be undertaken, including a cost estimate of up to \$1000; and 3. A current curriculum vitae. Applications are to be sent by e-mail to the Chair of the Achievement Awards Committee ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), no later than **28 February 2023**.

Le prix Bert et John Carr a été créé en 2010 (voir le Bulletin de la SEC, juin 2010 [p.102] ou septembre 2010 [p.170]) pour en appui à des activités de recherche menées par des individus qui étudient la faune entomologique ou l'histoire naturelle et la taxonomie de la faune entomologique du Canada. Une préférence sera donnée aux candidatures provenant d'amateurs, mais des candidatures présentées par des étudiants ou d'autres individus seront aussi prises en considération.

Les candidatures devront inclure : 1. Le nom et l'adresse du candidat; 2. Un énoncé sur les activités de recherche devant être entreprises par le candidat, dont une estimation des coûts jusqu'à concurrence de 1000 \$; et 3. Un curriculum vitae à jour. Les candidatures doivent être envoyées par courriel au président du comité des prix d'excellence ([Colin.Favret@umontreal.ca](mailto:Colin.Favret@umontreal.ca)), au plus tard le **28 février 2023**.

## Call for nominations: Societal Director, Director at Large, and Director for Equity, Diversity, and Inclusion

The Society will hold an online ballot to select candidates for a Societal Director, Director at Large, and Director for Equity, Diversity, and Inclusion. The selected candidates will then be presented as a slate for formal election by members at the Annual Meeting in Saskatoon in October. Nominations for these positions must be signed by three active members of the Society and be received by a Co-Secretary of the Entomological Society of Canada, by 28 February 2023 (see inside back cover for contact details).

## Appel à candidatures : de direction sociétale, de conseiller ou conseillère, et administrateur pour l'équité, la diversité et l'inclusion

La Société tiendra un vote en ligne afin de sélectionner des candidatures pour les postes de direction sociétale, de conseiller ou conseillère, et administrateur pour l'équité, la diversité et l'inclusion. Les candidatures sélectionnées seront ensuite présentées à la réunion annuelle à Saskatoon en octobre pour une élection formelle par les membres. Les nominations pour ces postes doivent être signées par trois membres actifs de la Société et être reçues par un ou une co-secrétaire de la Société d'entomologie du Canada au plus tard le 28 février 2023 (voir le troisième de couverture pour les informations de contact).

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## Executive Meeting - Call for Agenda Items

If members have any items they wish to be discussed at the next Board of Directors or Executive Council meeting, please send them to the Co-Secretaries (see inside back cover for contact details), as soon as possible.

## Réunion du conseil exécutif – Points à l'ordre du jour

Si des membres aimeraient ajouter des points à l'ordre du jour pour discussion à la prochaine réunion du Bureau des directeurs ou du Conseil de l'exécutif, merci de les envoyer aux cosecrétaires (voir le troisième de couverture pour les informations de contact), le plus tôt.

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## Members' discounts

Entomological Society of Canada members can enjoy discounts on publications from Annual Reviews, Elsevier, Cambridge University Press, and the Entomological Society of America. Details of how to benefit from these discounts are available on the member's area of the Entomological Society of Canada website at: <https://esc-sec.site-ym.com/>.

## Remise pour les membres

Les membres de la Société d'entomologie du Canada peuvent bénéficier d'une remise lors d'achats de publications de : Annual Reviews, Elsevier, Cambridge University Press et de la Société d'entomologie d'Amérique. Les informations nécessaires pour profiter de ces remises sont disponibles dans la section des membres du site de la Société d'entomologie du Canada à : <https://esc-sec.site-ym.com/>.

## Winners of the 2022 Entomological Society of Canada Photo Contest / Gagnants du concours de photographie 2022 de la Société d'entomologie du Canada

This year's photo contest provided many new entrants, with strong representation from newer members of our society. But, more importantly, the photo contest provided all of us with the opportunity to see and enjoy the wonderful photos our members took and are proud of. What a treat to get to see the passion and hard work of ESC photographers reflected in the images they shared. Although the popular voting system has the advantage of taking the pressure off the organizer to choose some winners, it does ultimately provide a range from which winners are chosen. **And this year, the winners are ...**

Le concours de photographie de cette année a attiré de nombreux nouveaux participants, avec une forte représentation des membres les plus récents de notre société. Mais, plus important encore, le concours de photographie nous a donné à tous l'occasion de voir et d'apprécier les merveilleuses photos que nos membres ont prises et dont ils sont fiers. Quel plaisir de voir la passion et le travail acharné des photographes de la SEC se refléter dans les images qu'ils ont partagées. Bien que le système de vote populaire ait l'avantage d'enlever la pression sur l'organisation d'avoir à choisir des photos gagnantes, il fournit finalement une gamme à partir de laquelle les photos gagnantes sont choisies. **Et cette année, les photos gagnantes sont....**

**First Place** goes to **Bob Noble**, with an amazing shot of mating behaviour in conopid flies. “Female *Physocephala tibialis* with three males trying to claim her. Brampton, Ontario”



**La première place** revient à **Bob Noble**, avec une photo stupéfiante du comportement d'accouplement chez les mouches conopides. « Femelle *Physocephala tibialis* avec trois mâles essayant de la revendiquer. Brampton, Ontario. »

**Second place** goes to student member **Supratim Laha**, with his photo entitled “A drilling weevil”. His caption reads as follows: “A weevil (*Curculio* sp.) with its remarkably long snout, was drilling a hole through the ostiole of fig fruit (*Ficus benghalensis*) to lay its eggs inside the fruit. Kolkata, West Bengal, India.”



**La deuxième place** revient à **Supratim Laha**, membre aux études, avec sa photographie intitulée « Un charançon foreur ». Sa légende se lit comme suit : « Un charançon (*Curculio* sp.) avec son museau remarquablement long, perçait un trou à travers l'ostiole du fruit de la figue (*Ficus benghalensis*) pour pondre ses œufs à l'intérieur du fruit. Kolkata, Bengale occidental, Inde. »

**Third place** winner goes to student member **Thilina Hetti Arachchige**, with his photo entitled “Brown Wasp Mantidfly”. His caption for this stunning capture reads as follows: “Brown Wasp Mantidfly (*Climaciella brunnea*) Locality: Municipality of Bifrost, Manitoba, Canada.”



**La troisième place** revient à **Thilina Hetti Arachchige**, membre aux études, avec sa photographie intitulée « Mantispidé brun ». Sa légende pour cette magnifique capture se lit comme suit : « Mantispidé brun (*Climaciella brunnea*). Localité : Municipalité de Bifrost, Manitoba, Canada. »

I would also like to add three honourable mentions from the voting leaderboard:

Je voudrais également ajouter trois mentions honorables provenant du classement des votes :

**Tim Haye** “Bizarre caterpillar of the lobster moth, *Stauropus fagi*, Delémont, Switzerland.”



**Tim Haye** pour « Curieuse chenille du bombyx du hêtre, *Stauropus fagi*, Delémont, Suisse. »

Frank Ashwood for “Ant woodlouse (*Platyarthrus hoffmanseggii*). This beautiful, blind, almost spectral-looking species of woodlouse lives exclusively within ant nests, where it feeds on detritus. The ants don’t seem bothered by them, as the woodlice rush around keeping their host’s nests clean of decaying organic material.”



Frank Ashwood pour « Le cloporte des fourmis (*Platyarthrus hoffmanseggii*). Cette belle espèce de cloporte aveugle, à l’aspect presque spectral, vit exclusivement dans les nids de fourmis, où elle se nourrit de détritus. Les fourmis ne semblent pas être dérangées, car les cloportes s’emparent de nettoyer les nids de leurs hôtes des matières organiques en décomposition. »

Gregory Courtney  
for "Masses of Small  
Square-gilled Mayflies  
(Caenidae: *Caenis* sp.)  
at light, Boone River,  
Iowa."



Gregory Courtney  
pour « Masses de petites éphémères (Caenidae : *Caenis* sp.) à la lumière, Boone River, Iowa ».

And a special shoutout to Taiga Morris, for one of my favourite shots of the contest, a lovely, dream-like image of a damselfly taken in Burnaby BC.



Et une mention spéciale à Taiga Morris, pour l'une de mes photos préférées du concours, une image charmante et onirique d'une demoiselle prise à Burnaby, C.-B.

Many thanks to those members who entered photos, and to all members who voted on the images submitted.

-Sean McCann

Un grand merci aux membres qui ont soumis des photographies, et à tous les membres qui ont voté sur les images soumises.

-Sean McCann

## Announcements / Annonces

### Advertising in the *Bulletin* / Publicité dans le Bulletin

The *Bulletin* welcomes enquiries regarding advertising within its pages.

For 2022, the advertising rates in the *Bulletin* have been set at \$235/annum for a half-page advertisement, and \$410/annum for a full-page advertisement, in each of the March, June, September and December issues.

For further information, please contact the *Bulletin* Editor ([roitberg@sfu.ca](mailto:roitberg@sfu.ca)).

Le *Bulletin* accueille les demandes de publicité dans ses pages.

Pour 2022, les tarifs publicitaires du *Bulletin* ont été fixés à 235 \$/an pour une demi-page et à 410 \$/an pour une page entière dans chacun des numéros de mars, juin, septembre et décembre.

Pour de plus amples informations, veuillez contacter le rédacteur du *Bulletin* ([roitberg@sfu.ca](mailto:roitberg@sfu.ca)).

# List of Contents: Regional Journals / Table des matières : Revues des sociétés régionales

## Contents of regional society journals

This regular feature highlights research published in the five regional society journals that include peer-reviewed papers. It should be noted that some regional society journals are not published on a regular basis and may not always include peer-reviewed articles.

## Contenu des revues des sociétés régionales

Cette rubrique régulière met en lumière la recherche publiée dans les cinq revues des sociétés régionales qui incluent des articles révisés par les pairs. Veuillez noter que certaines revues des sociétés régionales ne sont pas publiées sur une base régulière et peuvent ne pas toujours inclure des articles évalués par les pairs.



### Journal of the Entomological Society of Ontario Volume 153 (2022)

<https://journal.lib.uoguelph.ca/index.php/eso/index>

Lightburn, K., van Acker, R., and Raine, N. 2022. The first gynandromorph record of the North American bee *Hylaeus modestus* (Hymenoptera: Colletidae) J. ent. Soc. Ont., 153: jeso2022003. <https://journal.lib.uoguelph.ca/index.php/eso/article/view/6957/6711>



### Proceedings of the Entomological Society of Manitoba Volume 77

<https://home.cc.umanitoba.ca/~fieldspg/proceedings.html>

- Anderson, R.A. 2022. Oviposition bias by *Culex restuans* Theobald in Manitoba, Canada towards water used by horses (*Equus caballus* L.) for drinking. Proceedings of the Entomological Society of Manitoba 77: 5–12.
- Criddle, N. 2022. Studies in the biology of North American Acrididae: The egg-sac and egg. Proceedings of the Entomological Society of Manitoba 77: 15–51.
- Friesen C., and Y.M. Zhang. 2022. Rose gall wasps (Cynipidae: *Diplolepis*) of Manitoba, including a new provincial record. Proceedings of the Entomological Society of Manitoba 77: 52–60.
- Scientific abstracts and AGM minutes for the 77<sup>th</sup> Annual Meeting of the Entomological Society of Manitoba are also included in the Proceedings.
- New submissions to the Proceedings are welcomed. The Proceedings provides open-access peer-review at no cost to authors or readers. Submissions can be sent directly to one of the co-editors: Kelsey Jones ([Kelsey.Jones@agr.gc.ca](mailto:Kelsey.Jones@agr.gc.ca)) or Jason Gibbs ([Jason.Gibbs@umanitoba.ca](mailto:Jason.Gibbs@umanitoba.ca)).



# Canadian Weed Science Society Société canadienne de malherbologie

## CWSS-SCM Newsletter

The Society has recently adopted a new style for its newsletter so that there is no longer a Table of Contents. To see what's new in Canadian weed science since the last *Bulletin*, go to: <https://weedscience.ca/newsletters/>

- August      [https://c8x545.p3cdn1.secureserver.net/wp-content/  
uploads/2022/09/8Aug-2022-newsletter\\_3.pdf](https://c8x545.p3cdn1.secureserver.net/wp-content/uploads/2022/09/8Aug-2022-newsletter_3.pdf)
- October     [https://c8x545.p3cdn1.secureserver.net/wp-content/  
uploads/2022/10/10october-2022.pdf](https://c8x545.p3cdn1.secureserver.net/wp-content/uploads/2022/10/10october-2022.pdf)





THE CANADIAN PHYTOPATHOLOGICAL SOCIETY  
LA SOCIÉTÉ CANADIENNE DE PHYTOPATHOLOGIE

**CPS-SCP News**

VOL. 66, NO. 2 (June 2022)

<https://phytopath.ca/wp-content/uploads/2022/06/CPS-SCP-News-66-2-June2022.pdf>

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# Meeting announcements / Réunions futures

In view of the COVID-19 situation, readers should check the meeting website to ascertain if the conference is still proceeding and, if so, in what format.

## 7<sup>th</sup> International Entomophagous Insects Conference

Buenos Aires, Argentina, 17-21 April 2023

<https://ieic2022.org/>

## Entomological Society of America International Branch, 2023 Virtual Symposium

24–26 April 2023

<https://entsoc.org/membership/branches/international/virtual-symposium>

## Annual Meeting, Royal Entomological Society

University Of Exeter, UK, 5-7 September 2023

<https://www.royensoc.co.uk/event/ento23/>

## Joint Annual Meeting of the Entomological Society of Canada and the Entomological Society of Saskatchewan

Saskatoon, 15–18 October 2023

<entsocsask.ca/esc/esc-ess.html>

## XII European Congress of Entomology

Crete, Greece, 16–20 October 2023

[www.ece2023.com](http://www.ece2023.com)

## Entomology 23 (Annual Meeting of the Entomological Society of America)

National Harbor, Maryland, 5–8 November 2023

<https://entsoc.org/events/annual-meeting/entomology-2023>

## XXVII International Congress of Entomology /

## Le XXVII International Congress of Entomology

Kyoto, Japan, 25-30 August 2024 / 25-30 Août 2024

<https://ice2024.org>

Readers are invited to send the Bulletin Editor notices of entomological meetings of international, national or Canadian regional interest for inclusion in this list.

Les lecteurs sont invités à envoyer au rédacteur en chef des annonces de réunions entomologiques internationales, nationales ou régionales intéressantes afin de les inclure dans cette liste.

## Bulletin of the Entomological Society of Canada

Editor: Bernard Roitberg  
Assistant Editor: Donna Giberson

The *Bulletin of the Entomological Society of Canada*, published since 1969, presents quarterly entomological news, opportunities and information, details of Society business, matters of wider scientific importance and book reviews.

Published by the  
Entomological Society of Canada  
386 Broadway, Suite 503  
Winnipeg, MB R3C 3R6  
E-mail: [info@esc-sec.ca](mailto:info@esc-sec.ca)  
[www.esc-sec.ca/](http://www.esc-sec.ca/)

The Entomological Society of Canada was founded in 1863 primarily to study, advance and promote entomology. It supports entomology through publications, meetings, advocacy and other activities.

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ISSN: 0071-0741

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**Submission deadline for the next issue: 31 January 2023**



## Bulletin de la Société d'entomologie du Canada

Rédacteur: Bernard Roitberg  
Rédactrice adjointe: Donna Giberson

Le *Bulletin de la Société d'entomologie du Canada*, publié depuis 1969, présente trimestriellement des informations entomologiques, des occasions, des renseignements sur les opérations de la Société, des dossiers scientifiques d'importance et des analyses d'ouvrages.

Publié par la  
Société d'entomologie du Canada  
386 Broadway, Suite 503  
Winnipeg, MB R3C 3R6  
E-mail: [info@esc-sec.ca](mailto:info@esc-sec.ca)  
[www.esc-sec.ca/fr/](http://www.esc-sec.ca/fr/)

La Société d'entomologie du Canada a été établie en 1863 principalement pour promouvoir l'étude et l'avancement de l'entomologie. Elle soutient l'entomologie par l'entremise de publications, de réunions et d'autres activités.

Envoyer vos soumissions à:  
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ISSN: 0071-0741

Droits d'auteur 2022 Société d'entomologie du Canada

**Date de tombée pour le prochain numéro:  
31 janvier 2023**

# Officers of affiliated Societies, 2022-2023

## Dirigeants des Sociétés associées, 2022-2023

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### Entomological Society of Manitoba

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**Editor's note:** Society Directors and Officers are reminded to check these lists, and submit corrections, including the names and positions of new officers.



### Fascinated, yes but surprised, why? The curse of human chauvinism.

Recently, I came across a couple of popular articles (Wilke 2022; Chittka 2022) that got me thinking about what interests us and why. The first article posited that juvenile jumping spiders (salticids) engage in REM sleep in a manner not so different from ours. Thus, the investigators suggested that spiders may, in fact, dream just like a dog, or a bird might do.

In the second article, noted bee expert, Lars Chittka<sup>1</sup>, argued that bees are likely sentient beings based upon a wide range of experiments that demonstrate: (i) observation-based tool learning, (ii) ability to form mental images, (iii) ability to count (iv) intentionality and (v) emotion.

These kinds of articles fascinate us and why not? After all, we're entomologists. But why is the public likewise fascinated? That is probably so because of the element of surprise. Reading that a bee can count seems as surprising to us as a peek a boo is to a two-year old. But why is that so? Maybe it's not the element of surprise that is key but rather because we humans are so self-centered that anything that reminds us of us is interesting.

<sup>1</sup>See review of Chitka's book on *The Mind of a Bee*, page 195.

### Fasciné, oui, mais surpris, pourquoi? La malédiction du chauvinisme humain.

Je suis récemment tombé sur deux articles de vulgarisation (Wilke 2022; Chittka 2022) qui m'ont fait réfléchir aux choses qui nous intéressent et pourquoi. Le premier article affirmait que les jeunes araignées sauteuses (salticidés) se livrent au sommeil paradoxal d'une manière qui n'est pas si différente de la nôtre. Les chercheurs suggèrent donc que les araignées peuvent, en fait, rêver tout comme un chien ou un oiseau.

Dans le second article, Lars Chittka<sup>1</sup>, spécialiste des abeilles, affirme que les abeilles sont probablement des êtres sensibles, sur la base d'une vaste gamme d'expériences démontrant : (i) l'apprentissage d'outils basé sur l'observation, (ii) la capacité de former des images mentales, (iii) la capacité de compter, (iv) l'intentionnalité et (v) l'émotion.

Ce genre d'articles nous fascine et, pourquoi pas? Après tout, nous sommes des entomologistes. Mais pourquoi le public est-il également fasciné? C'est probablement à cause de l'élément de surprise. Lire qu'une abeille sait compter nous semble aussi surprenant qu'un coucou l'est pour un enfant de deux ans. Mais pourquoi en est-il ainsi? Ce n'est peut-être pas l'élément de surprise qui est déterminant, mais plutôt le fait que nous, les humains, sommes tellement égocentriques que tout ce qui nous ressemble est intéressant. Et c'est là que mes pensées s'assombrissent considérablement : nous (le grand public et probablement, à un moindre degré, les entomologistes) sommes des humains chauvins! Nous semblons penser que nous sommes uniques et que nous possédons

<sup>1</sup>Voir la critique du livre de Chitka *The Mind of a Bee*, page 195.

And here is where my thoughts become significantly darker: we (the general public and probably, to a lesser degree, entomologists) are human chauvinists! We seem to think that we are unique and that we harbour special talents that are too sophisticated for a lowly bee or slug to express; thus, our surprise when we observe insects performing mentally-challenging tasks. Concomitant with this surprise, we also feel relief (or smugness) when ‘lower’ organisms are shown to be incapable of performing to our level – the demonstration that Clever Hans the supposedly savant horse was indeed a fake is one such instance (Felton 2021).

But why shouldn’t a bee be able to count or a drosophila larva learn to avoid danger? This is of course a rhetorical question. There is no reason whatsoever to assume that arthropods could not evolve cognition especially given that arthropods share about 60% of their genes with us (Mirzoyan et al. 2019) and we are pretty smart, aren’t we?

Perhaps the more interesting question to ask is why cognition isn’t more commonly observed in arthropods? There is a current discussion among neuroscientists and behavioural ecologists that suggests that learning (and other cognitive functions) is an emergent property of neural circuitry and neural mechanisms, *ipso facto*, we should expect to find ‘intelligence’ almost anywhere we look for it (Hollis and Guillette 2015). Thus, the relevant question is not to ask whether a particular organism is ‘smart’ but rather, what are the challenges that it faces in its daily life and how does it solve them?

The concerns that I raised above are more than philosophical. I contend that research on behaviour, in arthropods, has been impeded by our human chauvinism. Thinking that we are special puts blinders on us, it limits the kinds of experiments that we might design, the range of theories that we might develop and how we might interpret our data. I am as guilty as anyone. In past seminars when using the word ‘decision’ to describe arthropod behaviour, I would often interject: ‘decision’ does not mean

des talents particuliers, trop sophistiqués pour qu’une abeille ou une limace puisse les exprimer; d’où notre surprise lorsque nous observons des insectes en train d’accomplir des tâches mentalement difficiles. Parallèlement à cette surprise, nous éprouvons également un sentiment de soulagement (ou de suffisance) lorsqu’il est démontré que les organismes « inférieurs » sont incapables d’atteindre notre niveau de performance – la démonstration que Clever Hans, le cheval prétendument savant, était en fait un faux, en est un exemple (Felton 2021).

Mais pourquoi une abeille ne pourrait-elle pas savoir compter ou une larve de drosophile apprendre à éviter le danger? Il s’agit bien sûr d’une question rhétorique. Il n’y a absolument aucune raison de supposer que les arthropodes ne pourraient pas développer leur cognition, d’autant plus que les arthropodes partagent environ 60 % de leurs gènes avec nous (Mirzoyan et al. 2019) et que nous sommes plutôt intelligents, n’est-ce pas?

La question la plus intéressante à poser est peut-être de savoir pourquoi la cognition n'est pas plus couramment observée chez les arthropodes? Une discussion actuelle entre neuroscientifiques et écologistes comportementaux suggère que l'apprentissage (et d'autres fonctions cognitives) est une propriété émergente des circuits neuronaux et des mécanismes neuronaux, et par le fait même nous devrions nous attendre à trouver de « l'intelligence » presque partout où nous la cherchons (Hollis et Guillette 2015). Ainsi, la question pertinente n'est pas de se demander si un organisme particulier est « intelligent », mais plutôt quels sont les défis auxquels il est confronté dans sa vie quotidienne et comment il les résout?

Les préoccupations que j'ai soulevées ci-dessus sont plus que philosophiques. Je soutiens que la recherche sur le comportement, chez les arthropodes, a été entravée par notre chauvinisme humain. Penser que nous sommes spéciaux nous met des œillères, cela limite les types d'expériences que nous pourrions concevoir, la gamme des théories que nous pourrions développer et la façon dont nous pourrions interpréter nos données. Je suis aussi coupable que quiconque. Lors de séminaires précédents, lorsque j'utilisais le mot « décision » pour décrire

cognition; it is just a convenient word. Not anymore.

And, finally, I leave you with a thought: Why are we human chauvinists? Now, there is a problem to solve!

Best wishes for safe and happy holidays.

Bernie

le comportement des arthropodes, j'interjetais souvent la remarque suivante : « décision » ne signifie pas cognition; c'est juste un mot commode. Plus maintenant.

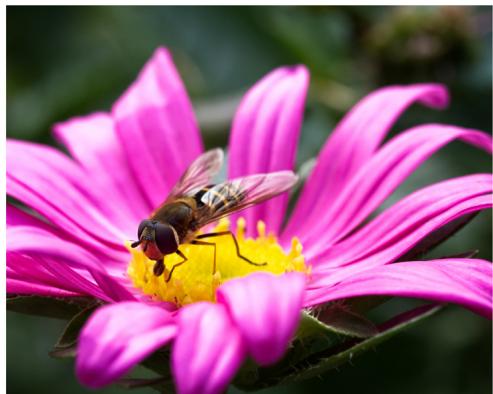
Et, finalement, je vous laisse avec une pensée : pourquoi sommes-nous des humains chauvins? Voilà un problème à résoudre!

Je vous souhaite de bonnes et heureuses fêtes de fin en toute sécurité.

Bernie

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B. Rotberg

A syrphid, probably a *Syrphus opinator*, on aster, North Vancouver, BC

# Entomological Society of Canada, 2022-2023

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Date of issue: December 2022 /  
décembre 2022

ISSN: 0071-0741

#### Front cover/Page couverture:

1. The face of a male leafcutter bee (*Megachile* sp.), resting on a yarrow inflorescence on a cold day in spring.  
Le visage d'un mâle d'une abeille découpeuse (*Megachile* sp.) se reposant sur une inflorescence de millefeuille lors d'une froide journée de printemps.  
Photo: Bob Lalonde
2. Mountain ash sawfly (*Pristiphora geniculata*) larvae feeding gregariously on host foliage (Vancouver, British Columbia). Larves de la tenthredine du sorbier (*Pristiphora geniculata*) se nourrissant en groupe sur le feuillage de leur plante hôte (Vancouver, Colombie-Britannique).  
Photo: Debra Wertman
3. Hickory tussock moth (*Lophocampa caryae*) in Centreville, Ontario.  
Halysidote du caryer (*Lophocampa caryae*) à Centreville, Ontario.  
Photo: Andrea Brauner
4. White tiger moth (*Spilosoma congrua*, family Erebidae). I found this beautiful tiger moth on the glass window at the Carins building at Brock University Ontario Canada.  
*Spilosoma congrua*, de la famille des Erebidae. J'ai trouvé ce magnifique papillon sur une fenêtre du bâtiment Carins de l'Université de Brock en Ontario, Canada.  
Photo: Lauren Nesbitt
5. The strawberry blossom weevil or *Anthonomus rubi* crawling over its namesake host, a strawberry flower (Agassiz, Canada). This invasive pest, originally from Europe, is now spread across the Fraser Valley of British Columbia, Canada.  
L'anthonome du fraisier, ou *Anthonomus rubi*, rampant sur son hôte, une fleur de fraisier (Agassiz, Canada). Ce ravageur envahissant, originaire d'Europe, est maintenant répandu dans la vallée du Fraser en Colombie-Britannique, au Canada.  
Photo: Warren Wong
6. Marsh beetle (Coleoptera: Scirtidae: *Prionocyphon limbatus* LeConte); South Skunk River, Iowa.  
Scirtidé (Coleoptera: Scirtidae: *Prionocyphon limbatus* LeConte); South Skunk River, Iowa.  
Photo: Gregory Courtney

#### Back cover/Quatrième de couverture:

- An inquisitive red-legged grasshopper (*Melanoplus femur-rubrum*) in tall grass (Aldergrove, British Columbia).  
Un criquet à pattes rouges (*Melanoplus femur-rubrum*) se montre curieux dans les hautes herbes (Aldergrove, Colombie-Britannique).

Photo: Debra Wertman